PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Airline	WG-5012A, -5015A, -5112A, -5115A Tel. Rec.	319-2
Altec Lansing	304A	319-3
Capehart	Chassis CX-43 Series Tel. Rec.	319-4
Emerson	Chassis 120257-D, -P, 120258-D, 120263-D, -P, 120265-D, 120277-D, 120278-D, 120279-B, 120282-P, 120284-P, 120285-T, 120286-P, 120287-T, 120290-P Tel. Rec. Prod. Chg. Bul. 157	319-1
Fada	PC17, -EB, -LO, PC21, -EB, -K, -KD, -KLO, -LO, UPC17, -EB, -LO, UPC21, -EB, -K, -KD, -KLO, -LO Tel. Rec.	319-5
Guild	665	319-6
Mitchell	1265	319-7
Motorola	56CC1, 2, 56CD1, 2, 3, 4 (Ch. HS-457)	319-8
Olympic	574	319-9
Sentinel	1U-367, 1U-368	319-10
Steelman	3RP6	319-11
Stromberg-Carlson	HFRP	319-12
Sylvania	21C501, 21C502, 21C601, 21D802, 21T201, 24C601, 24T301 Series (Ch. 1-533, -1, -2, -5) Tel. Rec.	319-13
Telectro	556 Recorder	319-14
Ultratone	1001, 1040	319-15
Zenith	HFX1283E, HFX1286R (Ch. 12X20)	319-16

SUPPLEMENTAL DATA IN PHOTOFACT FOLDER 6 IN SET 296

Emerson models 1108D, 1109D, 1110D, 1111D, 1112D, 1113D, 1116D, 1117D, 1120D, 1121D, 1122D, 1123D, 1124D, 1125D, 1126D and 1127D (Ch. 120257-D, 120258-D, 120263-D, 120265-D) were covered in Photofact Folder 6 - Set 296.

Many new models, along with late production changes were added with the publication of Production Change Bulletin 146 - Set 308-1.

Several new models and late production changes are added with the publication of this bulletin.

The following is a complete list of all models and chassis used in each set.

MODEL	CHASSIS	MODEL	CHASSIS
1108D	120257-D	1150D	120257-D
1108F	120257-P	1150F	120257-P
1109D	120258-D	1151	120285-T
1110D	120257-D	1151D	120258-D
1111D	120258-D	1152	120284-P
1112D	120257-D	1152D	120257-D
1113D	120258-D	1152F	120257-P
1116D	120257-D	1153	120285-T
1117D	120258-D	1153D	120258-D
1120D	120257-D	1154	120284-P
1121D	120258-D	1154D	120257-D
1122D	120263-D	1154F	120257-P
1122F	120263-P	1155	120285-T
1123D	120265-D	1155D	120258-D
1124	120286-P	1156	120286-P
1124D	120263-D	1156D	120263-P
1124F	120263-P	1156F	120263-D
1125	120287-T	1157	120287-T
1125D	120265-D	1157D	120265-D
1126D	120257-D	1158A	120282-P
1126F	120257-P	1158C	120290-P
1127D	120258-D	1160D	120263-P
1138	120284-P	1161D	120265-D
1138D	120257-D	1162D	120257-P
1138F	120257-P	1162F	120257-D
1139D	120258-D	1163D	120258-D
1140D	120257-D	1164	120284-P
1140F	120257-P	1164D	120257-P
1141D	120258-D	1165	120285-T

EMERSON CHASSIS 120257-D, 120257-P, 120258-D, 120263-D, 120263-P, 120265-D, 120277-D, 120278-D, 120279-B, 120282-P, 120284-P, 120285-T, 120286-P, 120287-T, 120290-P

PRODUCTION CHANGES
BULLETIN 157

PRODUCTION CHANGES
BULLETIN 157

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	1144D	120277-D/ 120279-B	1165D	120258-D
	1145D	120278-D/ 120279-B	1174	120286-P
	1150	120284-P	1175	120287-T

	CHASSIS IDENTIFICATION Chassis 120284-P, 120285-T, 120286-P, 120287-T and 120290-P are electrically identical to chassis 120257-D, except for tuner, picture tube and low voltage power supply. A partial schematic showing the new power supply featuring a 5U4GB in place of selenium rectifiers is shown in Fig. 1. Also, the third video IF output circuit has been revised. A partial schematic showing the new circuit is given in Fig. 2.
Ch. 120284-P, 120286-P	TUNER IDENTIFICATION Tuner part #470867 is similar to tuner part #470823, except for tuner shaft length. A schematic of tuner part #470823 is given in Production Change Bulletin 146 - Set 308-1.
Ch. 120290-P	Tuner part #470866 is similar to tuner part #470823, except for tuner shaft length and the addition of a crystal across the plate circuit of the oscillator tube.
Ch.120285-T, 120287-T	Chassis 120285-T and 120287-T employ tuner part #470825. A schematic of this tuner is given in Fig. 3.
Ch. 120284-P, 120285-T, 120286-P, 120287-T, 120290-P	PICTURE TUBE IDENTIFICATION A 21ALP4B picture tube is used in chassis 120284-P and 120285-T. A 24DP4A picture tube is used in chassis 120286-P, 120287-T and 120290-P.
	The following production changes were made late in production and apply to all receivers. TO REDUCE VIDEO RINGING In certain areas where a transmitting station is peaking the high frequency components of their picture transmission video ringing may occur. To eliminate this a 4.7KΩ, ½ watt resistor is added across L16. Chassis incorporating this change are coded as follows: 120284-P (A) 120287-T (A) 120285-T (A) 120290-P (A) 120286-P (A)
	INTERMITTENT OPERATION OF UHF OSCILLATOR TUBES Some 2AF4 UHF oscillator tubes would oscillate intermittently under low line voltage. A 330, 2 watt resistor has been added to correct this. See Fig. 1 for proper placement of this resistor. Chassis incorporating this change are coded as follows: 120285-T (B) 120287-T (B)
	HORIZONTAL WIDTH CONTROL ADDED After production started on chassis 120284-P, 120285-T, 120286-P, 120287-T and 120290-P an aluminum shim type width control was added. This aluminum shim (part #412302, 2½" x 6") is wrapped around the neck of the picture tube. To eliminate the possiblity of the aluminum shim shorting to the yoke windings the yoke (T4) is changed to part #708269. The deflection yoke (part #708269) is identical to part #708232, except for the addition of an insulated sleeve.

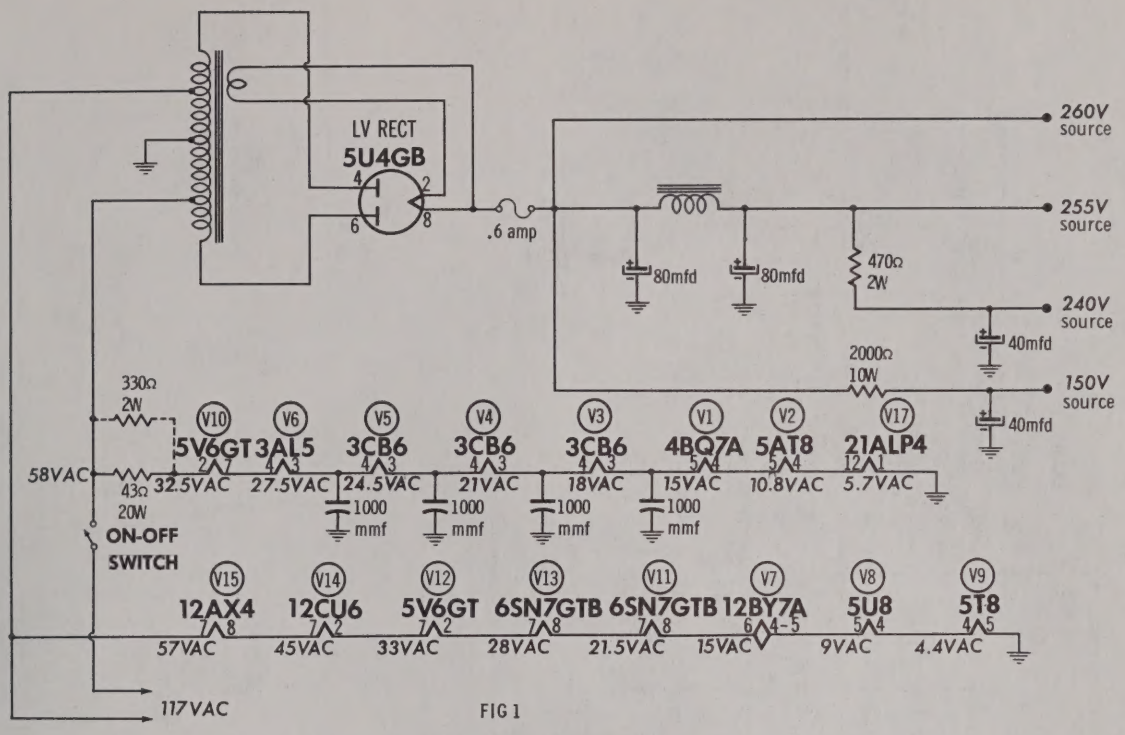
LV RECT
5U4GB
.6 amp
260V source
255V source
240V source
150V source
80mfd
80mfd
470Ω 2W
40mfd
2000Ω 10W
40mfd
330Ω 2W
58VAC
43Ω 20W
ON-OFF SWITCH
117VAC
V10 5V6GT
V6 3AL5
V5 3CB6
V4 3CB6
V3 3CB6
V1 4BQ7A
V2 5AT8
V17 21ALP4
32.5VAC
27.5VAC
24.5VAC
21VAC
18VAC
15VAC
10.8VAC
5.7VAC
1000 mmf
V15 12AX4
V14 12CU6
V12 5V6GT
V13 6SN7GTB
V11 6SN7GTB
V7 12BY7A
V8 5U8
V9 5T8
57VAC
45VAC
33VAC
28VAC
21.5VAC
15VAC
9VAC
4.4VAC

FIG 1

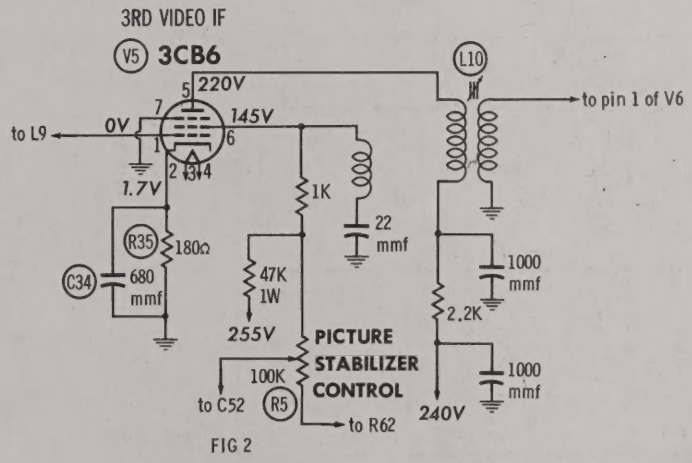
3RD VIDEO IF
V5 3CB6
L10
220V
145V
0V
to L9
1.7V
to pin 1 of V6
R35 180Ω
C34 680 mmf
1K
22 mmf
47K 1W
255V
PICTURE STABILIZER CONTROL
100K
R5
to C52
to R62
1000 mmf
2.2K
1000 mmf
240V

FIG 2

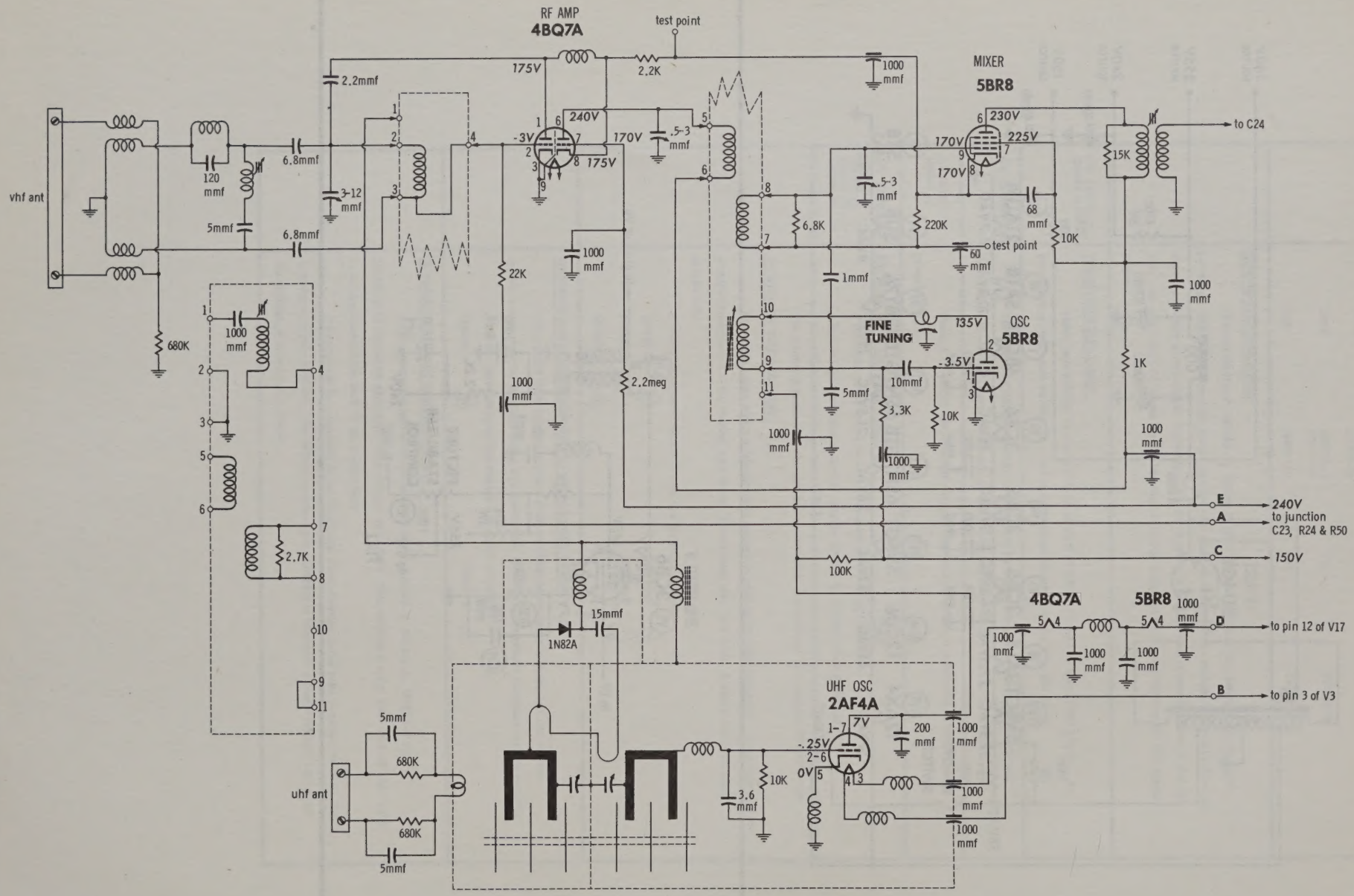
RF AMP
4BQ7A
test point
175V
2.2K
1000 mmf
MIXER
5BR8
2.2mmf
240V
230V
225V
170V
to C24
vhf ant
120 mmf
6.8mmf
3-12 mmf
5mmf
-3V
.5-3 mmf
15K
6.8K
220K
68 mmf
10K
test point
60 mmf
1mmf
22K
680K
FINE TUNING
135V
OSC
5BR8
-3.5V
10mmf
5mmf
3.3K
1K
2.2meg
E
240V
A
to junction C23, R24 & R50
C
150V
100K
2.7K
15mmf
1N82A
4BQ7A
5BR8
D
to pin 12 of V17
B
to pin 3 of V3
UHF OSC
2AF4A
7V
-.25V
0V
200 mmf
3.6 mmf
uhf ant

FIG 3

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

AIRLINE MODELS WG-5012A, -5015A, -5112A, -5115A

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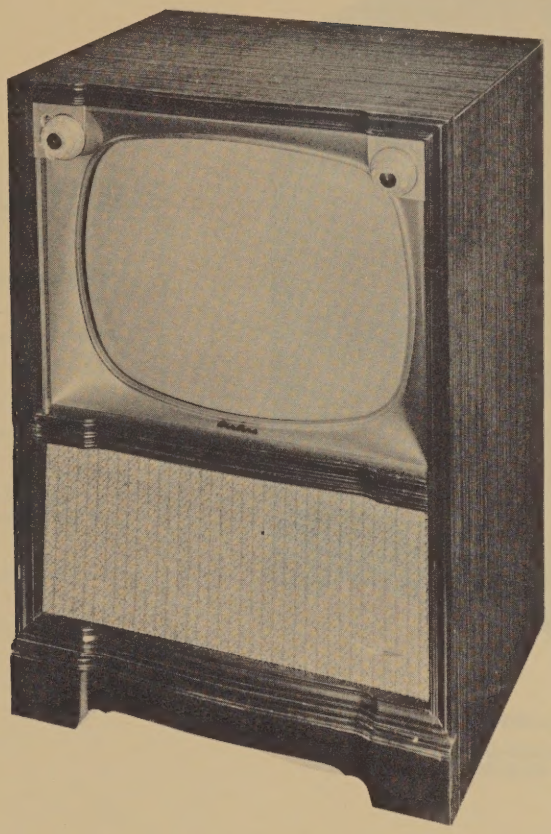
The contents for this envelope will be found among the last folders in this complete set of folders . . . unless it has been purchased as part of a complete volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



AIRLINE MODELS WG-5012A

TRADE NAME	Airline Models WG-5012A, WG-5015A, (VHF Only) WG-5112A, WG-5115A (VHF-UHF)
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Twenty

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.7 Amp. @ 117 Volts AC
TUNING RANGE Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 16
Parts List and Descriptions ..... 11 thru 14
Photographs
- Cabinet-Rear View 16
- Capacitor & Alignment Identification 3, 10
- Chassis-Top View 7
- RF Tuner 15
- Resistor & Inductor Identification 4, 9

Resistance Measurements 8
Servicing in the Field 1
Schematic (Alternate Tuner) 14
Schematic (TV) 2
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

AIRLINE MODELS WG-5012A, -5015A, -5112A, -5115A

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DATE 6-56 SET 319 FOLDER 2

AIRLINE MODELS WG-5012A, -5015A, -5112A, -5115A

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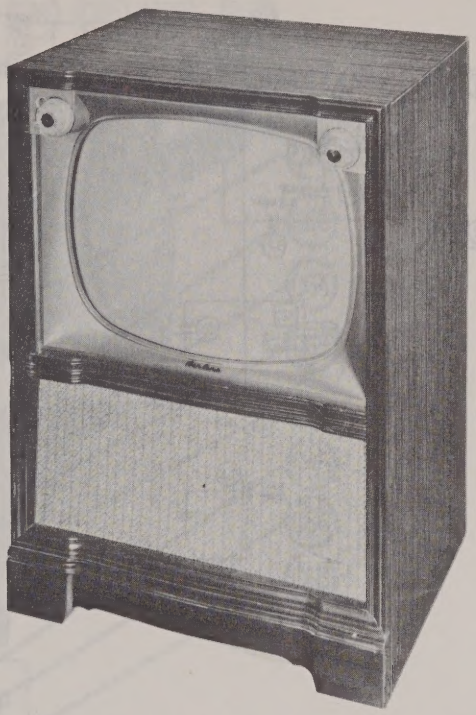

MODELS

WG-5012A, WG-5015A (VHF only),
WG-5112A, WG-5115A (VHF-UHF)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type control knobs from front panel of cabinet.

2. Remove 5 wood screws and 1 metal screws. Remove rear cover.

3. Disconnect speaker leads.

4. Remove 2 wood screws holding antenna terminal bracket.

5. Remove 6 chassis mounting board bolts holding chassis mounting board to cabinet, and 2 wood screws from 2 brackets at top of cabinet.

6. Slide chassis with mounting board from cabinet.

7. Remove 4 speed nuts. Remove speaker.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 7 push-on type control knobs from front panel of cabinet. Remove 2 metal screws from each cover escutcheon panel. Remove panels and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (L27) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, it is necessary to remove the rear cover and supply power to the chassis. Adjust the buzz control (R10) for maximum sound and MINIMUM buzz.

FUSES

One fuse is used for LV power supply protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

AIRLINE MODELS WG-5012A, -5015A, -5112A, -5115A

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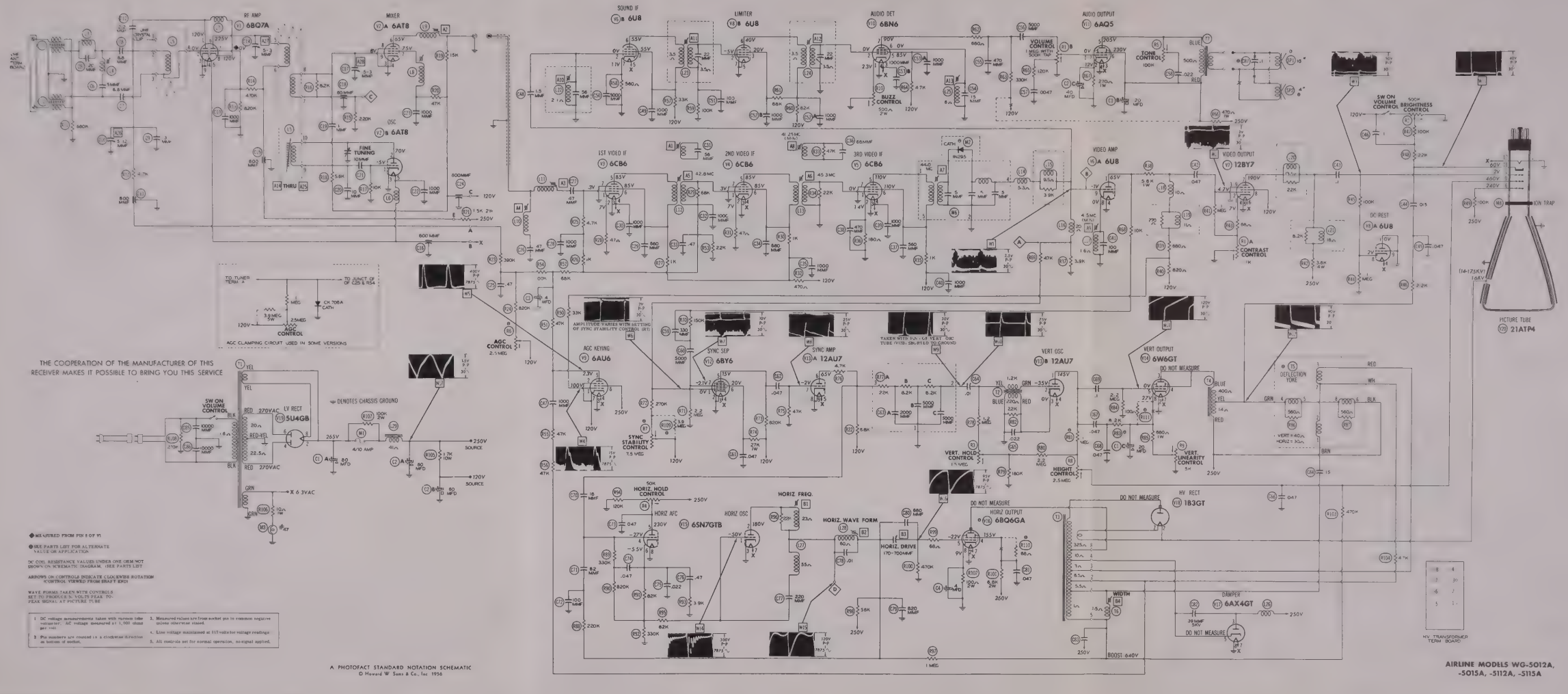
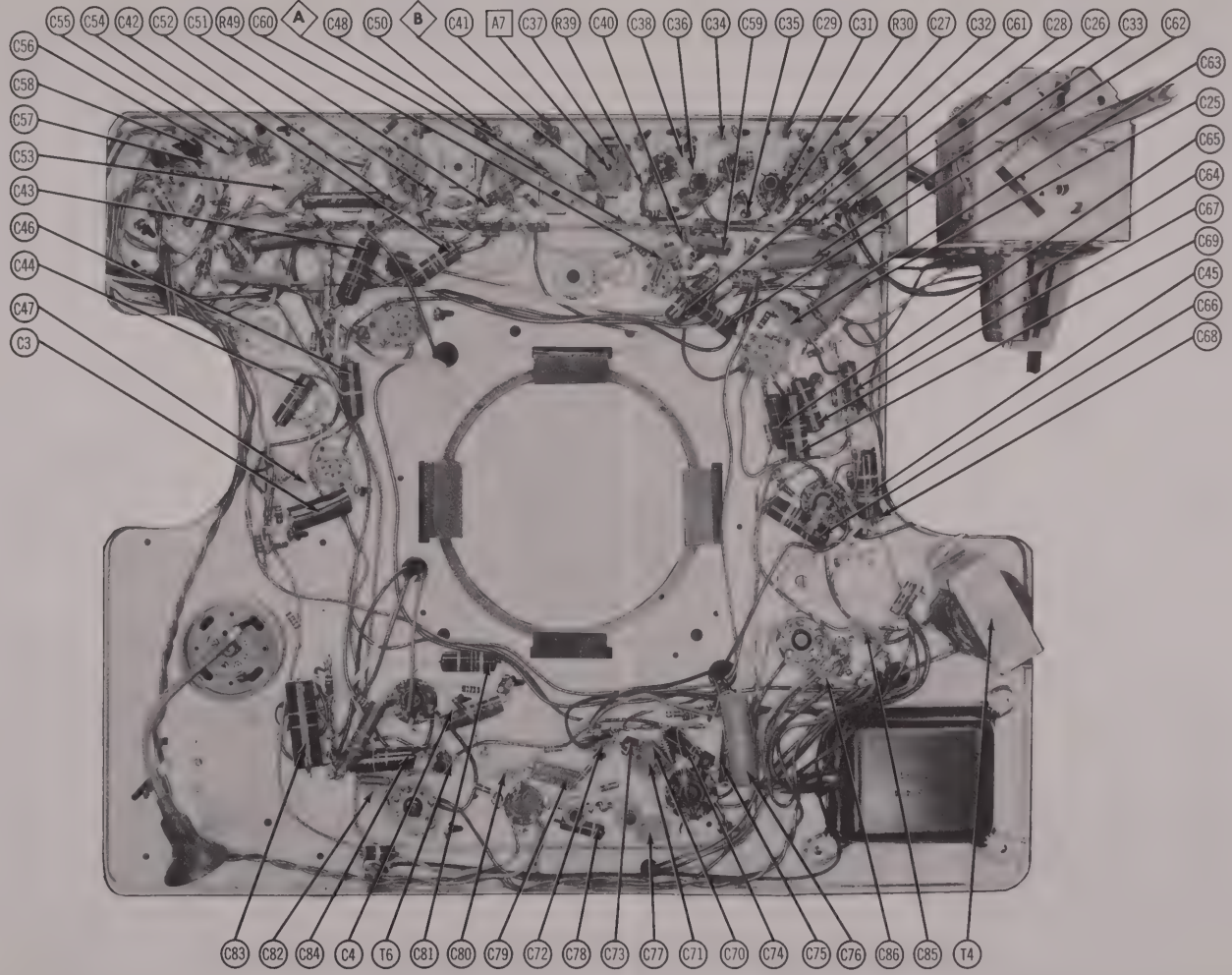
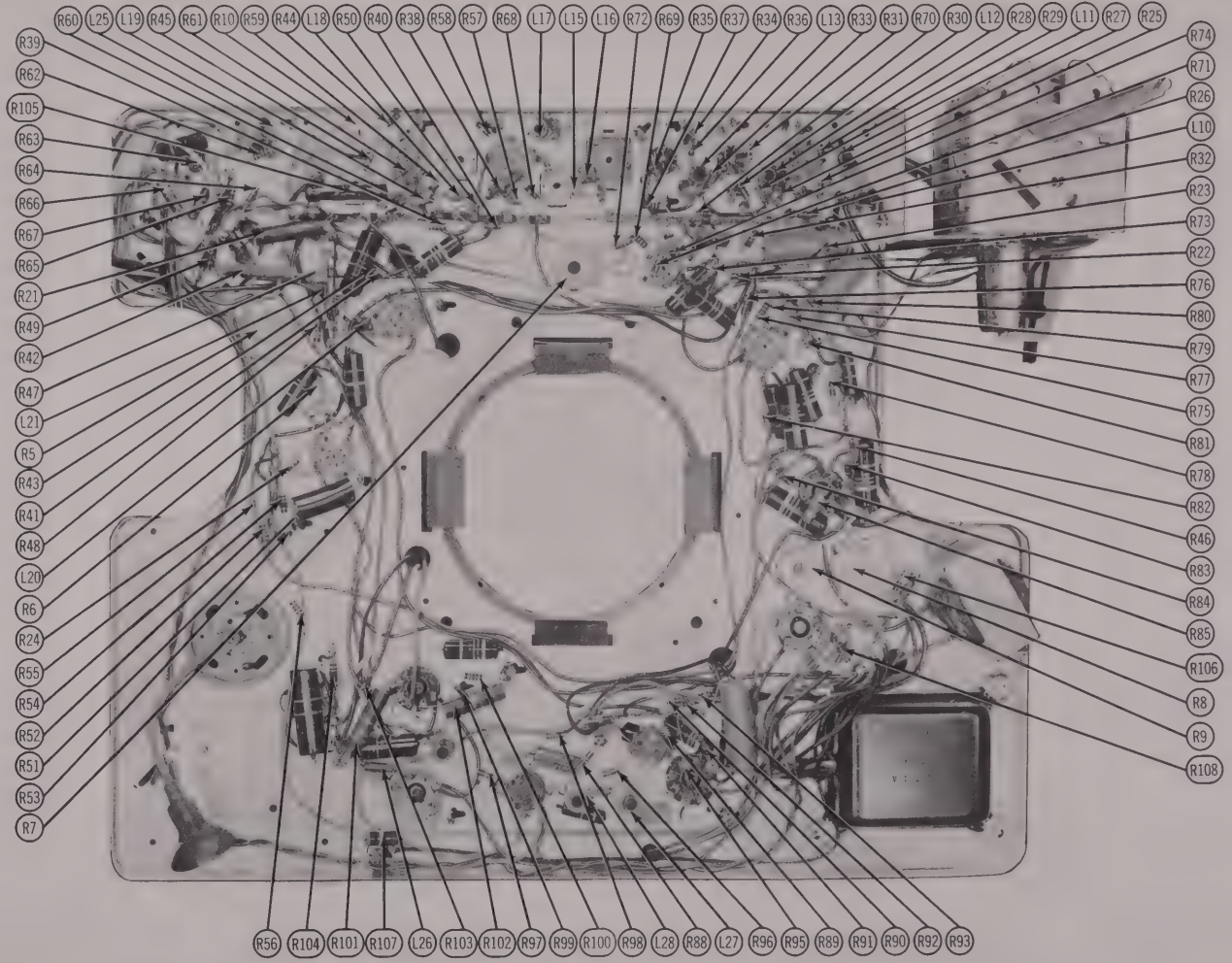


AIRLINE
MODELS WG-5012A, -5015A, -5112A, -5115A

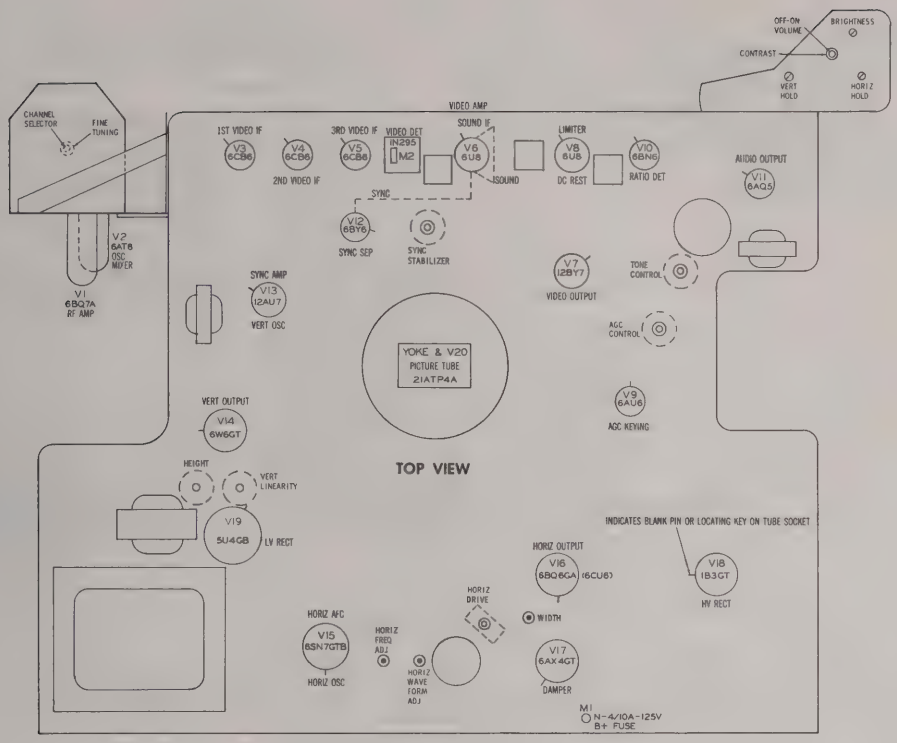


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V19, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V7, V8, V20
Has pic, no sound -V6, V9, V10, V11
Overloaded picture - V8

SYNC FAILURE
No vert. sync - V13
No horiz. sync - V13, V15
No vert. or horiz. sync - V12, V13

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, V20
No vertical deflection - V13, V14
Poor vert. linearity or foldover - V13, V14
Poor horiz. linearity or foldover - V15, V16, V17
Narrow picture - V15, V16, V17, V18, V19
Vert. off freq. - V13
Horiz. off freq. - V13, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage leads should be securely taped away from the chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 1.5 volt battery to the ungrounded side of C32. Connect the positive lead to chassis.
Use only enough generator output to provide usable indication on the scope or VTVM.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over converter tube (V2).	44MC (10MC Swp.)	41.25MC 45.75MC 47.25MC	Any unused channel	Vert. Amp. thru detector (Fig. 1) to pin 5 of 6CB6 (V3). Low side to chassis.	A1, A2, A3, A4	Adjust A1 to place 47.25MC marker in trap notch as in Fig. 2. Adjust A2, A3, and A4 for response similar to Fig. 2. A2 and A3 affect the flat portion of the curve. A4 positions the 41.25MC marker. Make sure 45.75MC marker is on peak of curve as shown or 44.5MC marker will be incorrect on overall response curve.
2.	"	"	Not used	42.8MC (Unmod.)	"	Use VTVM. DC probe to point (A). Low side to chassis.	A5	Increase bias to 4.5 volts. Attenuate generator output to maintain 1 volt at VTVM. Adjust for maximum deflection.
3.	"	"	Not used	45.3MC (Unmod.)	"	"	A6	"
4.	"	"	"	44MC (Unmod.)	"	"	A7	"
5.	"	"	"	41.25MC (Unmod.)	"	"	A8	Adjust for MINIMUM deflection.
6.	"	"	44MC (10MC Swp.)	41.25MC 42.25MC 42.5MC 43.9MC 44.5MC 45.3MC 45.75MC 47.25MC	"	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig. 3. SLIGHTLY retouch A5 thru A8 to obtain desired response. If A1 thru A4 requires retouching, step 1 should be repeated.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	10KΩ	High side thru 10KΩ to point (B). Low side to chassis.	4.5MC (Unmod.)	Any unused channel	DC probe to pin 2 (grid) of picture tube.	A9	Adjust for MINIMUM deflection.

ALTERNATE 4.5MC TRAP ALIGNMENT

Remove bias supply.
Tune in a TV station and adjust A9 for MINIMUM 4.5MC beat interference in the picture.

SOUND IF ALIGNMENT

Turn the set on and tune in a TV station. Reduce the signal input by use of an attenuator or similar device until hiss and background noise is noticed.
Adjust A10, A11, A12, A13 and R10 for maximum undistorted sound and MINIMUM buzz.
If hiss disappears during alignment, reduce signal until hiss reappears.

VHF OSCILLATOR ALIGNMENT

Connect the negative lead of a 4.5 volt battery to the unground side of C32. Connect the positive lead to chassis.
The channel oscillator adjustment screws are reached through a hole below and slightly to the right of the channel switch shaft. The correct adjustment screw is accessible though this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across VHF antenna leads with 120Ω in each lead.	213MC (10MC Swp.)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A14	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should be at 50%.
			207MC (10MC Swp.)	205.25MC 209.75MC	12		A15	
			201MC (10MC Swp.)	199.25MC 203.75MC	11		A16	
			195MC (10MC Swp.)	193.25MC 197.75MC	10		A17	
			189MC (10MC Swp.)	187.25MC 191.75MC	9		A18	
			183MC (10MC Swp.)	181.25MC 185.75MC	8		A19	
			177MC (10MC Swp.)	175.25MC 179.75MC	7		A20	
			85MC (10MC Swp.)	83.25MC 87.75MC	6		A21	
			79MC (10MC Swp.)	77.25MC 81.75MC	5		A22	
			69MC (10MC Swp.)	67.25MC 71.75MC	4		A23	
			63MC (10MC Swp.)	61.25MC 65.75MC	3		A24	
			57MC (10MC Swp.)	55.25MC 59.75MC	2		A25	

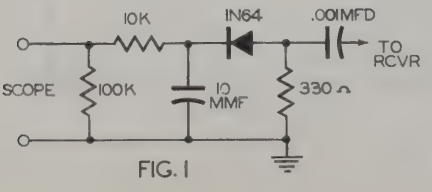


FIG. 1

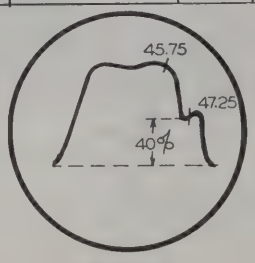


FIG. 2

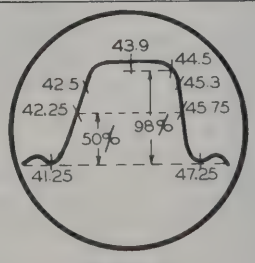


FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 3 volt bias supply to the ungrounded side of C25. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	207MC (10MC Swp.)	205. 25MC 209. 75MC	12	Vert. amp. thru 10KΩ to point Ⓒ. Low side to chassis.	A26, A27, A28	Adjust for response curve similar to Fig. 5 with markers above 90%.
10.	"	"	213MC (10MC Swp.)	211. 25MC 215. 75MC	13	"		If markers fall below 70% on any channel, make compromise adjustment of A26, A27, and A28 with channel switch set to that channel. Then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp.)	199. 25MC 203. 75MC	11			
			195MC (10MC Swp.)	193. 25MC 197. 75MC	10			
			189MC (10MC Swp.)	187. 25MC 191. 75MC	9			
			183MC (10MC Swp.)	181. 25MC 185. 75MC	8			
			177MC (10MC Swp.)	175. 25MC 179. 75MC	7			
			85MC (10MC Swp.)	83. 25MC 87. 75MC	6			
			79MC (10MC Swp.)	77. 25MC 81. 75MC	5			
			69MC (10MC Swp.)	67. 25MC 71. 75MC	4			
			63MC (10MC Swp.)	61. 25MC 65. 75MC	3			
			57MC (10MC Swp.)	55. 25MC 59. 75MC	2			

UHF TUNER ALIGNMENT

The UHF tuner portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion is not recommended in the field.

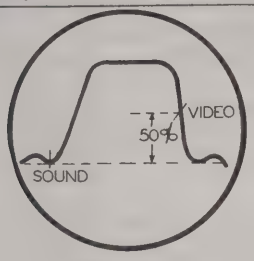


FIG. 4

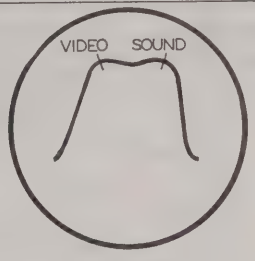
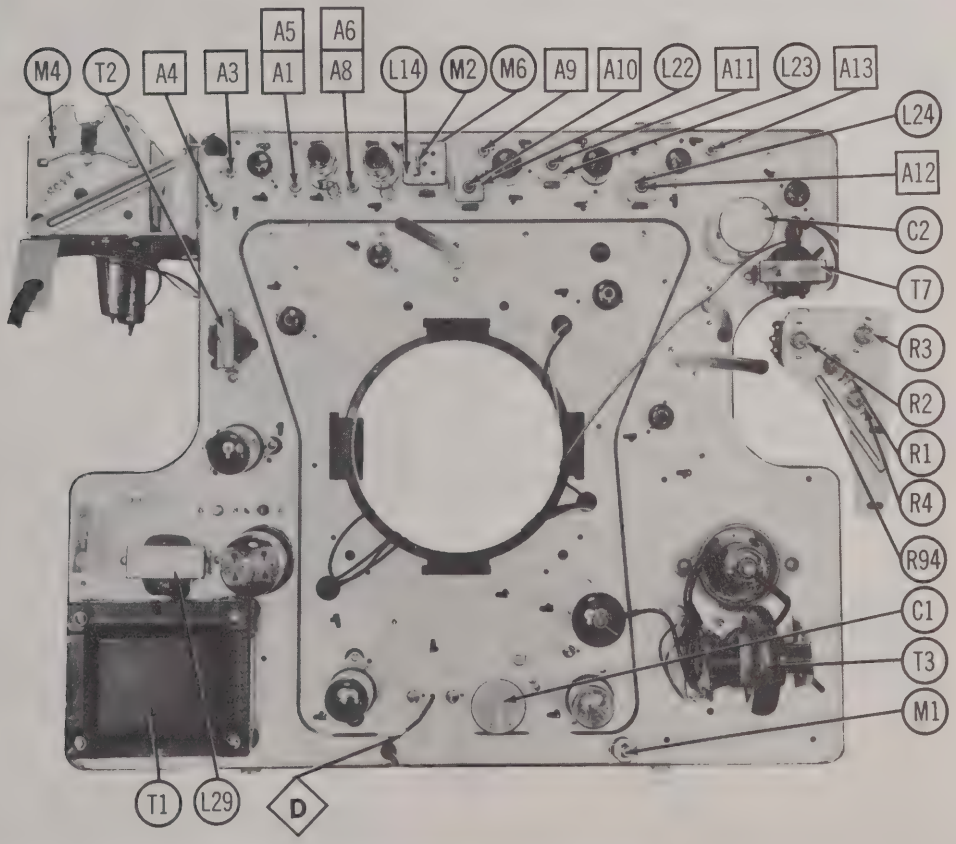


FIG. 5

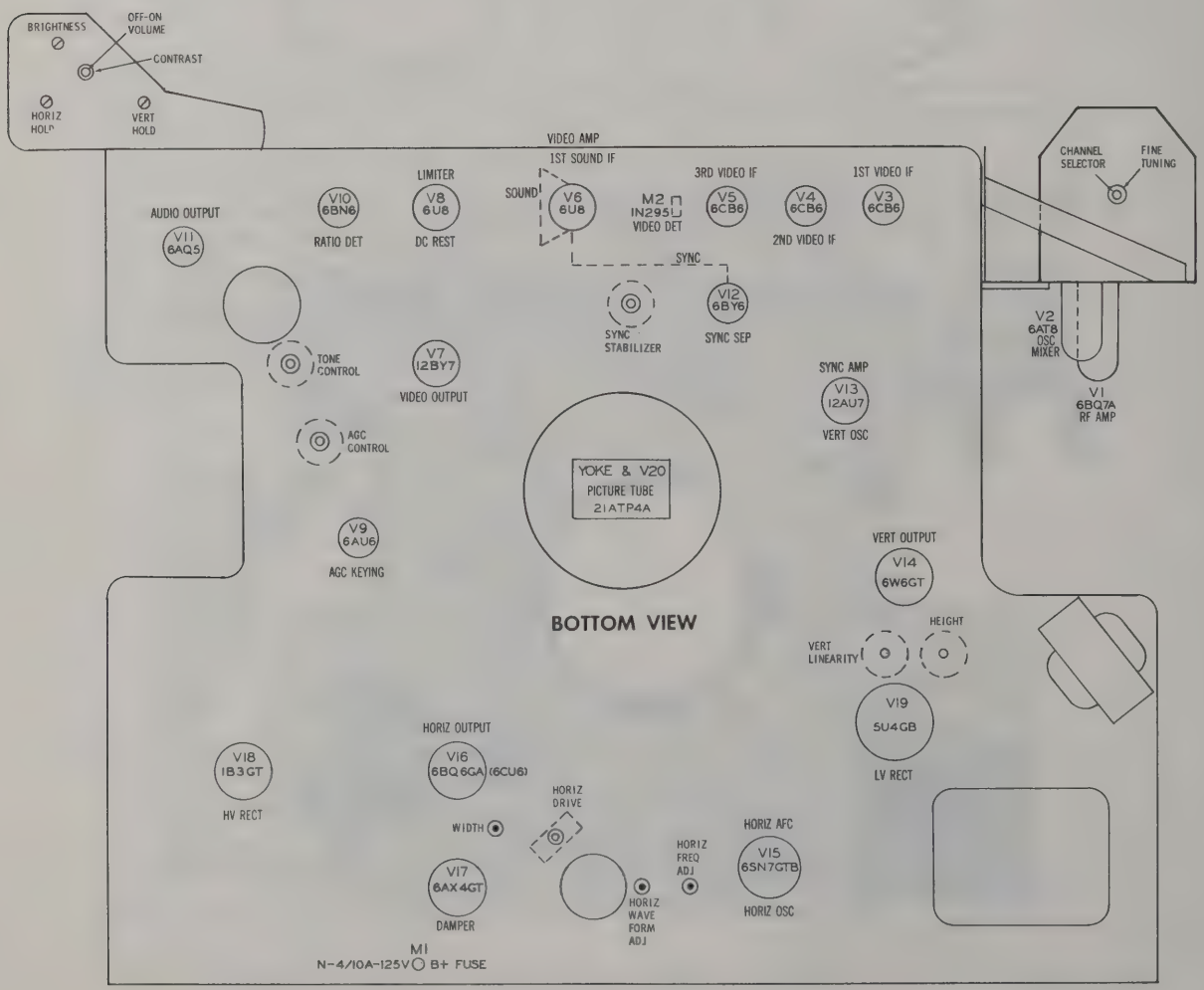


CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	INF	550KΩ	0Ω	0Ω	.1Ω	† 1.5KΩ	300KΩ	INF	0Ω
V 2	6AT8	10KΩ	† 7.3KΩ	0Ω	0Ω	.1Ω	† 17KΩ	† 50KΩ	0Ω	220KΩ
V 3	6CB6	30KΩ	47Ω	0Ω	.1Ω	† 3.2KΩ	† 3.2KΩ	0Ω		
V 4	6CB6	22KΩ	47Ω	0Ω	.1Ω	† 3.2KΩ	† 3.2KΩ	0Ω		
V 5	6CB6	.2Ω	180Ω	0Ω	.1Ω	† 2.7KΩ	† 2.7KΩ	0Ω		
V 6	6U8	† 9KΩ	2.1Ω	† 35KΩ	0Ω	.1Ω	† 35KΩ	560Ω	1.6Ω	3.9KΩ
V 7	12BY7	400Ω	1Meg	0Ω	0Ω	0Ω	.1Ω	† 3.6KΩ	† 1.7KΩ	0Ω
V 8	6U8	0Ω	100KΩ	† 150KΩ	.1Ω	0Ω	† 85KΩ	0Ω	1Meg	0Ω
V 9	6AU6	† 35KΩ	† 1.7KΩ	0Ω	.1Ω	120KΩ	† 45Ω	† 1.7KΩ		
V 10	6BN6	300Ω	3.5Ω	.1Ω	0Ω	† 6.5KΩ	6Ω	† 330KΩ		
V 11	6AQ5	500KΩ	270Ω	.1Ω	0Ω	† 1KΩ	† 500Ω	500KΩ		
V 12	6BY6	50KΩ	0Ω	0Ω	.1Ω	† 820KΩ	† 30KΩ	2.2Meg		
V 13	12AU7	▲ 1.7Meg	2Meg	220Ω	.1Ω	.1Ω	† 13KΩ	47KΩ	0Ω	0Ω
V 14	6W6GT	TP	0Ω	† 450Ω	† 450Ω	2.2Meg	NC	.1Ω	1KΩ	
V 15	6SN7GTB	400KΩ	† 56KΩ	0Ω	1.5Meg	† 10KΩ	400KΩ	.1Ω	0Ω	
V 16	6BQ6GA	TP	0Ω	NC	† 6.8KΩ	470KΩ	NC	.1Ω	100Ω	TOP CAP ▲ 10Ω
V 17	6AX4GT	NC	NC	750KΩ	NC	† 45Ω	NC	.1Ω	0Ω	
V 18	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲ 335Ω
V 19	5U4GB	NC	30KΩ	NC	23Ω	NC	20Ω	NC	30KΩ	
V 20	21ATP4A	0Ω	1Meg	PIN 6 † 100KΩ	PIN 10 ▲ 420KΩ	PIN 11 † 250KΩ	PIN 12 .1Ω			

† MEASURED FROM PIN 2 OF V19.
▲ MEASURED FROM PIN 3 OF V17.
TP-TIE POINT.
NC-NO CONNECTION.



TUBE PLACEMENT CHART

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA		NOTES
		AIRLINE PART No.	STANDARD REPLACEMENT	
V1	RF Amplifier	6BQ7A	6BQ7A	
V2	Mixer-Oscillator	6AT8	6AT8	
V3	1st. Video IF Amplifier	6CB6	6CB6	
V4	2nd. Video IF Amplifier	6CB6	6CB6	
V5	3rd. Video IF Amplifier	6CB6	6CB6	
V6	Video Amplifier- Sound IF Amplifier	6U8	6U8	
V7	Video Output	12BY7	12BY7	
V8	DC Restorer-Limiter	6U8	6U8	
V9	AGC Keying	6AU6	6AU6	
V10	Audio Detector	6BN6	6BN6	
V11	Audio Output	6AQ5	6AQ5	
V12	Sync Separator	6BY6	6BY6	
V13	Sync Amplifier-Vert. Osc.	12AU7	12AU7	
V14	Vert. Output	6W6GT	6W6GT	
V15	Horiz. AFC-Horiz. Osc.	6SN7GTB	6SN7GTB	
V16	Horiz. Output	6BQ6GA	6BQ6GA	6CU6 may be used in some versions
V17	Damper	6AX4GT	6AX4GT	
V18	HV Rectifier	1B3GT	1B3GT	
V19	LV Rectifier	5U4GB	5U4GB	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	AIRLINE PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V20	21ATP4 ①	21ATP4 ①	21ATP4 ①	21ATP4/ 21ATP4A ②	① Aluminized ② Silver screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲80	300	45X428	AFH4-07	B068	FP235	TM-2015	D-390	R2203
B	■20	300			BR205	TC36	TD-25-50	FM-0525	
C	▲20	50							
C2A	▲80	300	45X429	AFH3-29-50	B081	FP229.4	TM-D80-300	D-175	R2204
B	■60	300			BR505	TC39	TD-50-50	FM-0550	
C	▲40	50							
C3	4	50	45X418	PRS150V4	BR550	TC30	TD-4-50	MMT-0505	TVA-1303
C4	4	50	45X418	PRS150V4	BR550	TC30	TD-4-50	MMT-0505	TVA-1303

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	120		13L8V121K		D6-121		811-121			
C6	5		13L8C050D	NP0-DI5	TCZ-5	Z011	NP0A-050	ZT-555	5TCCB-V47	
C7	6.8		13L8C6R81	NP0-DI6.8	TCZ-6.8	Z013	NP0A-6R8	ZT-5568	5TCCB-V68	
C8	6.8		13L8C6R81	NP0-DI6.8	TCZ-6.8	Z013	NP0A-6R8	ZT-5568	5TCCB-V68	
C9	3			NP0-DI3	TCZ-3R3	Z007	NP0A-030	ZT-553	5TCCB-V33	
C10	5-15		31B-901-02							
C11	800		13M-320EA-102ZC							
C12	2.2		13L8GP2R2C	NP0-SI2.2	TCZ-2R2	Z006	NP0A-2R2		5TCCB-V22	
C13	1000		13L8X102Z	BPD-001	DD-102	K069	811-102	DC-521	5HK-D1	
C14	.5-3		31B-902		829-3		3115-01-0R5	CT565A		
C15	800		13M-320EA-102ZC							
C16	800		13M-320EA-102ZC							
C17	.5-3		31B-902		829-3		3115-01-0R5	CT565A		
C18	60		13M-320Q-600J							
C19	1		13D-111-20	NP0-SI1	TCZ-1		NP0A-010		5TCCB-V1	
C20	10		13L8UA100D							
C21	10		13L8Q100A							
C22	1000		13L8X102Z	BPD-001	DD-102	K069	811-102	DC-521	5HK-D1	
C23	1000		13L8X102Z	BPD-001	DD-102	K069	811-102	DC-521	5HK-D1	
C24	800		13M-320EA-102ZC							
C25	.47	200	RCP10M2474M	P288N-47		CUB2P47		PT4047	2TM-P47	
C26	47			NP0-SI47	TCZ-47	TZ22	831-470	ZT-5447	MS-447	
C27	47			NP0-SI47	TCZ-47	TZ22	831-470	ZT-5447	MS-447	
C28	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C29	680			BPD-00068	DD-681	K065	811-681	UC-5368	5GA-T68	
C30	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C31	56			NP0-SI56	TCZ-56	TZ24	NP0-337-560			
C32	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C33	.47	200	RCP10M2474M	P288N-47		CUB2P47		PT4047	2TM-P47	
C34	680			BPD-00068	DD-681	K065	811-681	UC-5368	5GA-T68	
C35	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C36	68			NP0-SI68	TCZ-68	TZ26	NP0-337-680		5TCC-Q68	
C37	560		80X9	1464-00056	D6-681	1R5T56	NP0-337-560		MS-356	
C38	470		80X4	1464-00047	DD-471	5R5T47	811-471	UC-5347	1FM-347	
C39	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C40	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C41	100			NP0-SI100	TCZ-100	TZ30	801-101	ZT-531	5TCC-T1	
C42	.047	400	RCP10M4473M	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C43	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C44	.015	600	RCP10M6153M	P688N-15	DD16-153	CUB6S15		PT6115	6TM-S15	
C45	.047	600		BPD-05	DF-503	CUB6S47		PT6147	6TM-S47	
C46	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C47	1000		47X753	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C48	1.5			NP0-SI1.5	TCZ-1R5	TZ04	NP0A-1R5	ZT-5515	5TCCB-V15	
C49	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C50	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C51	100			NP0-SI100	D6-101	TZ30	801-101	ZT-531	5TCC-T1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C52A	1000		80X3	BPD-5A001	DDS-105	DDS69	813-001	DCDS51	5HK-5D1	
B	1000									
C52A	1000		80X3	BPD-5X001	DDS-105	DDS69	813-001	DCDS51	5HK-5D1	
B	1000									
C54	15									
C55	470		80X4	BPD-00047	DD-471	KD60	811-471	UC-5347	5GA-T47	
C56	5000			BPD-005	DD-502	KD80	811-005	DC-535	5HK-D5	
C57	.0047	400	RCP10M4472M	BPD-0047	DD-472	CUSBD47	GP3-333-472	PT6347	5TM-D47	
C58	.023	500	RCP10M5233M	BPD-03	DF-303	CUSBS22	817-03	PT6133	5TM-S22	
C59	330	500	47ZS70	1469-00033		CUSTS33			MS-333	
C60	5000			BPD-005	DD-502	KD80	811-005	DC-535	5HK-D5	
C61	.047	400	RCP10M4473M	BPD-05	DF-503	CUSB47		PT6147	5TM-S47	
C62	.047	400	RCP10M4473M	BPD-05	DF-503	CUSB47		PT6147	5TM-S47	
C63A	3000		†76X7	†PA510	†PC-100	†1182761	†1406-01	DC-323	†V1	
B	8000							DC-325		
C	5000							DC-325		
C64	.01	400		BPD-01	DS-103	CUB401	GP3-333-103	PT411	4TM-S1	
C65	.023	500	RCP10M2233M	BPD-03	DF-303	CUSB223	817-03	PT6123	5TM-S22	
C66	.047	600	RCP10M6473M	BPD-05	DF-503	CUSB647		PT6147	5TM-S47	
C67	.047	400	RCP10M4473M	BPD-05	DF-503	CUSB547		PT6147	5TM-S47	
C68	.047	300	RCP10M3473M	BPD-05	DF-503	CUSB347		PT6147	5TM-S47	
C69	.1	600		P488N-1	DF-104	CUB4P1		PT601	4TM-P1	
C70	15	500	RCM20B150K	1469-00001	TCS-15	22RSQ15	MP0K-150		MS-415	
C71	82	500	RCM20E830K	1469-00003	TCS-83	22RSQ82	MP0-337-820		MS-482	
C72	100	500		1469-0001	TCS-100	22RS71	MP0-337-101	MC5B35	MS-3(	
C73	.047	600	RCP10M4473M	BPD-05	DF-503	CUSB647		PT6147	5TM-S47	
C74	.047	300	RCP10M3473M	BPD-05	DF-503	CUSB347		PT6147	5TM-S47	
C75	.023	300	RCP10M2233M	BPD-03	DF-303	CUSB223	817-03	PT6123	5TM-S22	
C76	.47	200	RCP10M4474M	P288N-47		CUSBP47		PT6147	5TM-P47	
C77	330	500		1469-00032	TCS-220	22RST22	MP0-335-221	PT411	MS-322	
C78	.01	400		CUB401	DS-103	CUB401	GP3-333-103	PT411	4TM-S1	
C79	820	500	RCM25B821K	1464-00023		1R5T23			MS-382	
C80	680			1464-00066	DD-681	KD68	811-681	UC-5368	MS-368	
C81	.047	400	RCP10M4473M	BPD-05	DF-503	CUSB47		PT6147	5TM-S47	
C82	99	5000	47XT56		DD60-390					
C83	.1	600		P588N-1	DF-104	CUB5P1		PT601	5TM-P1	
C84	.15	300	RCP10M1534M	P288N-15		CUB1P15		PT6015	2TM-P15	
C85	10000		47X515	BPD-01	DD-103	KD82	811-01	DC-511	5HK-S1	
C86	10000			BPD-01	DD-103	KD82	811-01	DC-511	5HK-S1	
C87	.1	600		P588N-1	DF-104	CUB5P1		PT601	5TM-P1	Note 1

† Items C63A, C73B, C63C, R77A, R77B and R77C are combined in one unit.
Note 1. Not used in some versions.

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1000Ω	½	B782X4A	F1-4	R7V-579	* QJ-573	UF13L	Contrast (Panel)
B	1 MEG	½		R2-56			UR15-733 †	Volume Range 500 KΩ (Rear)
C	Switch			KB-2			U8-27	Attach to R1B.
R2A	500KΩ	½	B40X394C	AB-59	A47-500K-S	QJ1-133	U-50	Brightness
B	Shaft	½	Not Req.	AK-8	R2-3/6	NQ	D8-37	Attach to R2A.
R3A	1. 5MEG	½	B40X395C	AB-743	A47-1.5MEG-S	QJ1-138	U-155	Vert. Hold
B	Shaft	½	Not Req.	AK-8	R2-3/6	NQ	D8-37	Attach to R3A.
R4A	50KΩ	½	B40X395C	AB-21	A47-50K-S	QJ1-123	U-35	Horizontal Hold
B	Shaft	½	Not Req.	AK-8	R2-3/6	NQ	D8-37	Attach to R4A.
R5A	100KΩ	½	B40X407	AB-40	A47-100K-S	QJ1-128	TA15L	Tone
B	Shaft	½	Not Req.	AK-4	FS2-5	Not Req.	Not Req.	Attach to R5A.
R6A	2. 5MEG	½	■ B40X405	AB-33	A47-2.5MEG-S	QJ1-139	TA25SL	AGC-Note 1
B	Shaft	½	Not Req.	AK-19	RN-3	Not Req.	Not Req.	Attach to R6A.
R7A	7. 5MEG	½	■ B40X406	AB-39	A47-7.5MEG-S	QJ1-143	PTA25SL	Sync Stability-Note 2
B	Shaft	½	Not Req.	AK-18	RN-3	Not Req.	Not Req.	Attach to R7A.
R8A	2. 5MEG	½	B40X405A	AB-33	A47-2.5MEG-S	QJ1-139	TA25SL	Height
B	Shaft	½	Not Req.	AK-4	FS2-5	NQ	Not Req.	Attach to R8A.
R9A	1500Ω	½	B40X41U	AB-6	A47-1500-S	QJ1-109	PTA15L	Vert. Linearity
B	Shaft	½	Not Req.	AK-19	RN-3	NQ	Not Req.	Attach to R9A.
R10	5000	2	40X397		38-800			Buzz-Wire Wound

Note 1. Later production receivers will use an alternate control Part No. 40X412 in this application.
Note 2. Later production receivers will use an alternate control Part No. 40X405 in this application.
† Universal Replacement (Mallory Exact Duplicate Part No. UE75L).
■ Versions using control Part No. 40X405 for replacement remove the 3.9 megohm resistor connected from high side to arm of control.
■ Versions using control Part No. 40X405 for replacement remove the 3.9 megohm resistor (R109) used with the old control.
* Concentrikit Equivalent: K-8 Kit, Base Elements and Shafts; BU-108 & P6-200 (Panel)
B13-137 X & B1-218 (Rear)
78-3 (Switch)

RESISTORS

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R11	680Ω	½	12TA5849M	BTS-680K	
R12	4700Ω	½	12TA5472K	BTS-470Q	
R13	820KΩ	½	12TA5824K	BTS-820K	
R14	470KΩ	½	12TA5474K	BTS-470K	
R15	220KΩ	½	12TA5224M	BTS-230K	
R16	820KΩ	½			
R17	10KΩ	½	12TA6103K		
R18	5600Ω	½	12TA5562K		
R19	15KΩ	½	12TA6153K		
R20	47KΩ	½	12TA6473K		
R21	1500Ω	3		BTS-1500	
R22	680Ω	3		BTS-680	
R23	390KΩ	½		BTS-390K	
R24	820KΩ	½		BTS-820K	
R25	4700Ω	½			
R26	1000Ω	½		BTS-1000	
R27	1000Ω	½		BTS-1000	
R28	470 5%	½		BTS-47	
R29	680Ω	½			
R30	1000Ω	½		BTS-1000	
R31	470 5%	½		BTS-47	
R32	4700Ω	½		BTS-470	
R33	47KΩ	½			
R34	33KΩ	½			
R35	1000Ω	½		BTS-1000	
R36	180Ω	½		BTS-180	
R37	3900Ω 5%	½		BTS-3900	
R38	5600Ω	½		BTA-5600	
R39	680Ω	½		BTS-680	
R40	820Ω	½		BTS-830	
R41	1MEG	½		BTS-1Meg	
R42	3600Ω	4	43X351		

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R43	68Ω	½		BTS-68	
R44	1Meg	½		BTS-1Meg	
R45	100KΩ	½		BTS-100K	
R46	2200Ω	½		BTS-2200	
R47	100KΩ	½		BTS-100K	
R48	33KΩ	½		BTS-33K	
R49	100KΩ	½		BTS-100K	
R50	33KΩ	½		BTS-33K	
R51	47KΩ	½		BTS-47K	
R52	68KΩ	½		BTS-68K	
R53	22KΩ	½		BTS-22K	
R54	100KΩ	½		BTS-100K	
R55	47KΩ	½		BTS-47K	
R56	47KΩ	½		BTS-47K	
R57	33KΩ	½		BTS-33K	
R58	560Ω	½		BTS-560	
R59	100KΩ	½		BTS-100K	
R60	82KΩ	½		BTS-82K	
R61	47KΩ	½		BTS-47K	
R62	68Ω	½		BTS-680	
R63	330KΩ	½		BTS-330K	
R64	4700Ω	½		BTS-4700	
R65	120KΩ	½		BTS-120K	
R66	470Ω	1		BTA-470	
R67	270Ω	1		BTA-270	
R68	10KΩ	½		BTS-10K	
R69	47KΩ	½		BTS-47K	
R70	150KΩ	½		BTS-150K	
R71	3. 2MEG	½		BTS-3.2Meg	
R72	270KΩ	½		BTS-270K	
R73	820KΩ	½		BTS-820K	
R74	27KΩ	½		BTA-27K	

RESISTORS (cont)

ITEM No	RATING: OHMS	WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R75	47KΩ	½		BTS-47K	
R76	4700Ω	½		BTS-4700	
R77A	82KΩ	½		BTS-22K	
B	6300		† 76X7	BTS-8200	
C	8300			BTS-8200	
R78	1. 2MEG	½		BTS-1. 2Meg	
R79	180KΩ	½		BTS-180K	
R80	2. 2MEG	½		BTS-2. 2Meg	Note 1
R81	1Meg	½		BTS-1Meg	
R82	22KΩ	½		BTS-22K	
R83	8200Ω	½		BTS-8200	Note 2
R84	2. 2MEG	½		BTS-2. 2Meg	
R85	68Ω	½		BTA-680	
R86	68Ω	½			
R87	56Ω	½			
R88	180KΩ	½			
R89	330KΩ	½			
R90	820KΩ	½			
R91	82KΩ	½			
R92	330KΩ	½			

Note 1. Some versions use a 470KΩ ½W resistor in this application.
Note 2. Some versions use a 12KΩ ½W resistor in this application.
Note 3. Used only with Sync stability control No. 40X405.
Note 4. Not used in some versions.
† Items R77A, R77B, R77C, C63A, C63B, C63C are combined in one unit.

RESISTORS (cont)

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R93	3900Ω	½			
R94	180KΩ	½			
R95	82KΩ	½			
R96	22KΩ	½		BTS-1Meg	
R97	1Meg	½		BTS-56K	
R98	56KΩ	½			
R99	68Ω	½			
R100	470KΩ	½			
R101	6800Ω	3			
R102	100Ω	3			
R103	470KΩ	½		BTS-470K	
R104	4700Ω	3			
R105	1700Ω	10	43X386	1 3/4A-1750	
R106	10Ω	1		BTA-10	
R107	100KΩ	3		BTS-100K	
R108	270KΩ	½		BTS-270K	
R109	3. 9MEG	½		BTS-3. 9Meg	Note 3
R110	68Ω	½			Note 4
R111	100Ω	½		BTS-100	Note 4

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: AIRLINE PART No.	Halldorson PART No.	Merit PART No	Thordarson PART No.	Triad PART No.
T1	117VAC	525VCT @ 175A	5V @ 3A	6.3V @ 9.6A	53X354-A		P5S30 ①	P5S32 ②	R-5IBC ①

① Parallel and phase 6.3V ③ 6A windings, tape 6.3V ④ 1.2A winding.
② Tape high HV winding, tape 5V ③ 3A winding. Parallel and phase 6.3V ④ 5A windings.
③ Parallel and phase 6.3V windings.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: AIRLINE PART No	Halldorson PART No	Merit PART No	RCA TYPE No	Ram PART No	Stancor PART No	Thordarson PART No.	Triad PART No.
T3	Vert. Osc. Trans.	54X10	B6702	A-3003	209T1 ①	V405	A-8125	26A03	A-97X
T3	Horiz. Output Trans.	53X386	F3418 & RF800 ①	RVO-36 & MWC-11 *	225T1 & 212R1	X264 & 201R16 *	A-8353 * ①	27L7-18 & WC-18 * ①	D-50 & WC-12 * ①
T4	Vert. Output Trans.	51X173	21900 ②	A-3823 ③	V302 ①	A-8142 ③	26S72 ②	A-108X ③	
T5A B	Yoke(90°) Horiz.(19MC) Vert.(39MC)	9A2385-1 ④ 9A2385 ⑤ 2A435 ⑤	DF607 ⑤	MDF-92 ⑤	235D1 ⑤	Y90Y18A3 ⑤ ? ⑤	DY-18A ⑤	Y-16 ⑤	Y-41-1 ⑤
T6	Width Coil (1-9MHz)	9A2381	RF803 ⑤	MWC-6	21IR1	201R15	WC-8	WC-22	WC-12 ⑥

① Drill new mounting hole(s).
② Use 8 to 1 turns ratio.
③ Connect as auto transformer.
④ Includes resistors R86 and R87.
⑤ Alternate Airline part number.
⑥ Tube rear cover and centering device.
⑦ Use original rear cover and centering device.
⑧ Use original horizontal yoke damping network.
⑨ Do not use tap.
⑩ Connect to coded red and blue terminals.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	8	9	9	9	9	8	9	9
	4	7	7	7	7	1	7	7
	3	7	7	7	7	1	7	7
	2	4-Also See Note ⑪	4-Also See Note ⑪	4-Also See Note ⑪	"2"-Also See Note ⑪	3-Also See Note ⑪	"2"-Also See Note ⑪	4-Also See Note ⑪
	1	3	3	3	3	3	3	3
	5	1	1	1	1	4	1	1
Connect Width Coil Across	1 & 5	Terms. #1 & #2 of RF800 Across 3 & 1	MWC-11 Across 3 & 1	212R1 Across 3 & 1	201R16 Across 3 & 1	6 & 7	WC-18 Across 3 & 1	Red & Blue Terms. of WC-12 Across 3 & 1
Special Notes:		⑫ ⑬	⑪ ⑬	⑫ ⑬	⑫ ⑬	⑫ ⑬	⑫ ⑬	⑫ ⑬

⑪ Connect approximately 150-180MMFD ③ 3KV in series with resistor R104, and connect across horizontal yoke terminals #3 and #7.
⑫ Change values of resistors R55 and R56 as necessary to obtain required peak to peak pulse voltage at plate of V5, AGC Keying tube.
⑬ Ground either terminal #8 or terminal #7.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: AIRLINE PART No	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
T7	4.7KΩ	3-4Ω	51X176	Z1005	A2930	A-3877			

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: AIRLINE PART No.	QUAM PART No	RCA TYPE No	NOTES
SP1	10"	PM	3-4Ω	12A533	10A31	237S1	① Used in some versions.
	6"	PM	3-4Ω	12A528 ①	6A1	229S1	
SP2	4"	PM	3-4Ω	12A532	4A07	223S1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	MEISSNER PART No	MERIT PART No	MILLER PART No	NOTES
L1	Ant. Matching Trans.	0Ω	0Ω	31TA-613				
L2	Ant. Matching Trans.	0Ω	0Ω	31TA-613				
L3	FM Trap	0Ω		31T-617				
L4	IF Trap	.3Ω		31T-418-01				
L5A	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-302-D				Channel 2.
B	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-303-D				Channel 3.
C	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-304-D				Channel 4.
D	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-305-D				Channel 5.
E	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-306-D				Channel 6.
F	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-307-D				Channel 7.
G	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-308-D				Channel 8.
H	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-309-D				Channel 9.
I	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-310-D				Channel 10.
J	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-311-D				Channel 11.
K	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-312-D				Channel 12.
L	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-313-D				Channel 13.
L6	Pix. Choke	0Ω		34A-732				
L7	Neut. Coil	0Ω		31B-727				
L8	RF Coil	0Ω		35A-154-01				
L9	Conv. Plate	.1Ω		31UA-505				
L10	39MC Trap	0Ω		9A3369			TV-153	6225
L11	1st. Video IF	.1Ω		9A3365			TV-131	6225
L12	2nd. Video IF	.3Ω	.3Ω	9A3363				6222
L13	3rd. Video IF	.3Ω	.3Ω	9A3364				6221
L14	Series Peaking Coil	5. 3Ω		9A3375		10-3086	TV-180	6176
L15	Series Peaking Coil	9. 5Ω		36A35		10-3003*	TV-181*	6177*
L16	Shunt Peaking Coil	20Ω		36A34		19-4400	TV-190	6134
L17	4.5MC Trap	1.5Ω		9A3383				
L18	Shunt Peaking Coil	10Ω		36A36		19-3100	TV-181	6177
L19	Shunt Peaking Coil	11Ω		36A1		19-3100a	TV-181a	6177a
L20	Series Peaking Coil	18. 5Ω		36A13		19-4160	TV-184	6134a
L21	Shunt Peaking Coil	18Ω		36A37		19-3260a	TV-188a	6184
L22	1st. Sound IF	2.1Ω		9A3363				
L23	2nd. Sound IF	3.5Ω	3.5Ω	9A3368		17-3495	TV-113	6203
L24	3rd. Sound IF	3.5Ω	3.5Ω	9A3368		17-3495	TV-113	[redacted]
L25	Quadrature Coil	6Ω		9A3367		20-1005		1490
L26	RF Choke	.1Ω		9A3360		19-1001		4604

* Parallel with 3.9KΩ resistor.
■ Parallel with 270Ω resistor.
▲ Parallel with 8.2KΩ resistor.
● Parallel with 22KΩ resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES PRI.	DC RES SEC.	REPLACEMENT DATA: AIRLINE PART No	MEISSNER PART No	MERIT PART No	MILLER PART No	RCA TYPE No	Ram PART No	Thordarson PART No	NOTES
L27	78Ω		9A2372			62111				Horiz. Osc. Tapped ① 55Ω. Horiz. Waveform.
L28	60Ω		9A2371							

† Enlarge mtg. hole.

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE @ CURRENT 1000 (Ma)	REPLACEMENT DATA: AIRLINE PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No.
L29	.270A	45Ω	15H	52X95-4	C5037 ①	C1098 ①	C1338 ①	28C44 ①	C-33X ①

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: AIRLINE PART No. FUSE	AIRLINE HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE HOLDER	BUSS PART No. FUSE	BUSS HOLDER
M1	N	4/10A 125V	16X162	16X163	333, 400 (N 4/10A)	346009	N 4/10	HN 3/10-1

AIRLINE MODELS WG-5012A, -5015A, -5112A, -5115A

PARTS LIST AND DESCRIPTIONS (Continued)

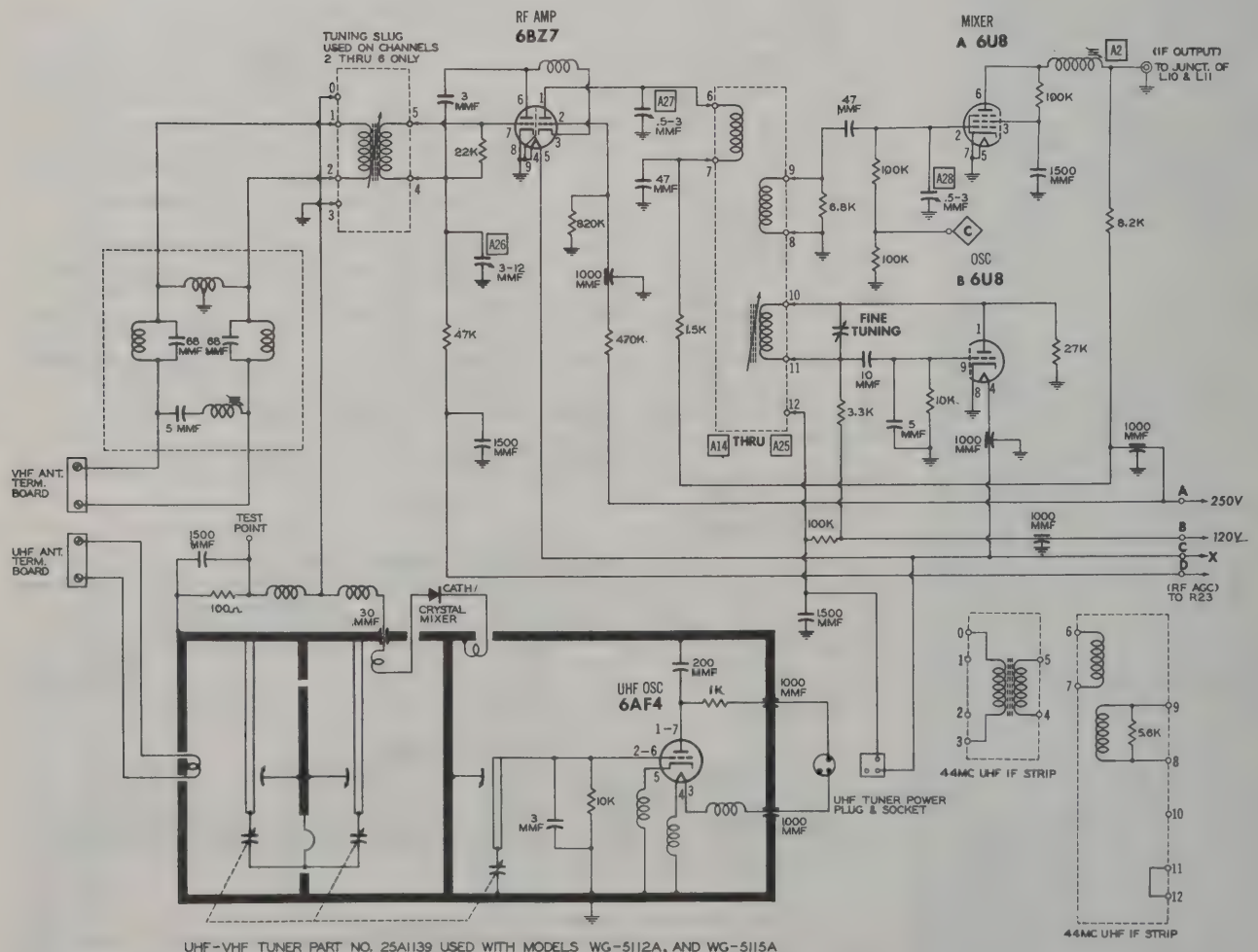
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		AIRLINE PART No.	SYLVANIA PART No.	
M2	1N295 *	17X190	1N60	Video Det. (Pigtail)

* Some versions may use crystal diode types CK706A or 1N60.

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Dial Light	7A103	#47
M4	Tuner	25A1137	VHF - Models WG-5012A, WG-5015A.
M5	Tuner	25A1139	VHF-UHF Combination; Models WG-5112A, WG-5115A.
M6	Video Det. Assy.	9A2370	Includes M2, Coils & Capacitors.
M7	Centering Device	2A435	Includes Deflection Yoke (T5) Rear Cover.
M8	Ion Trap	2A421	
B3	Trimmer Cap.	17A271	Horiz. Drive (170-700MMF.).
	Knob	S-39A69	UHF Fine Tuning - Models WG-5012A, WG-5015A.
	Knob	10A858-2	Fine Tuning (Mahogany Cabinets) - Models WG-5112A, WG-5115A.
	Knob	10A858-3	Fine Tuning (Blond Cabinets) - Models WG-5112A, WG-5115A.
	Knob	S-38A68	VHF Channel Selector - Models WG-5012A, WG-5015A.
	Knob	S-38A72	VHF Channel Selector - Models WG-5112A, WG-5115A.
	Knob	S-38A73	UHF Channel Selector - Models WG-5112A, WG-5115A.
	Knob	S038A70	Contrast - All Models.
	Knob	S-38A71	On-Off-Volume - Models WG-5012A, WG-5015A.
	Knob	S-38A74	On-Off-Volume - Models WG-5112A, WG-5115A.
	Knob	10A861-1	Secondary Controls - All Models.
	Mask	38A14	Gold - Mahogany Cabinets.
	Mask	38A18	Silver - Blond Cabinets.



UHF-VHF TUNER PART NO. 25A1139 USED WITH MODELS WG-5112A, AND WG-5115A

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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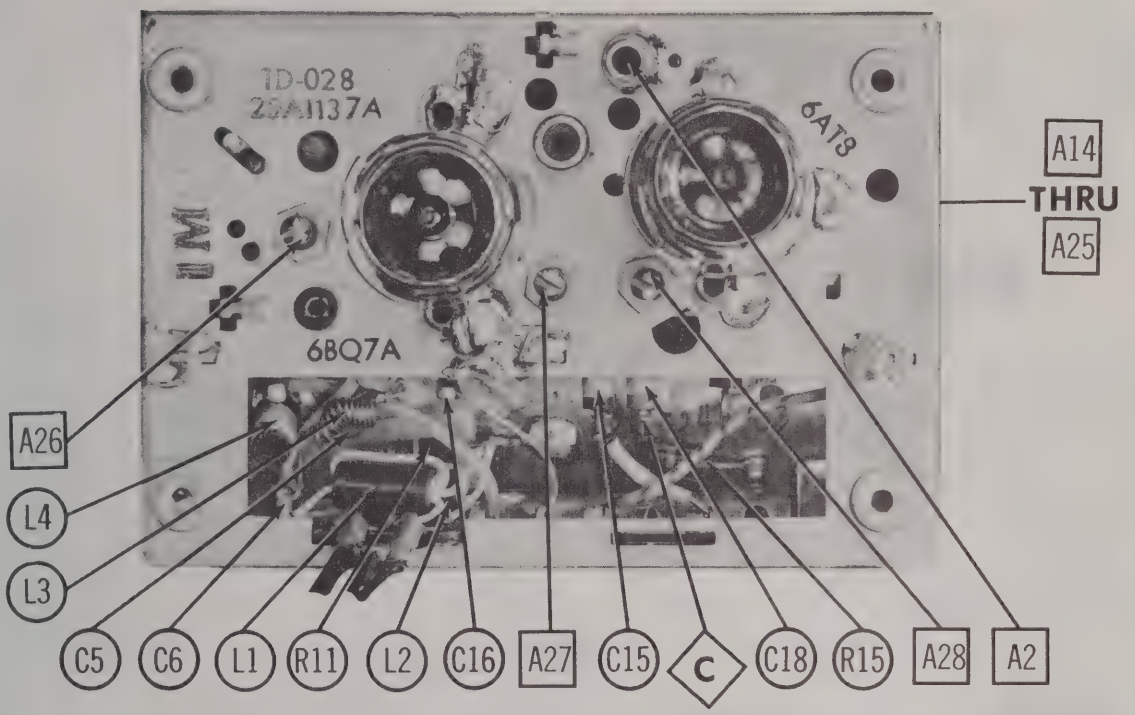
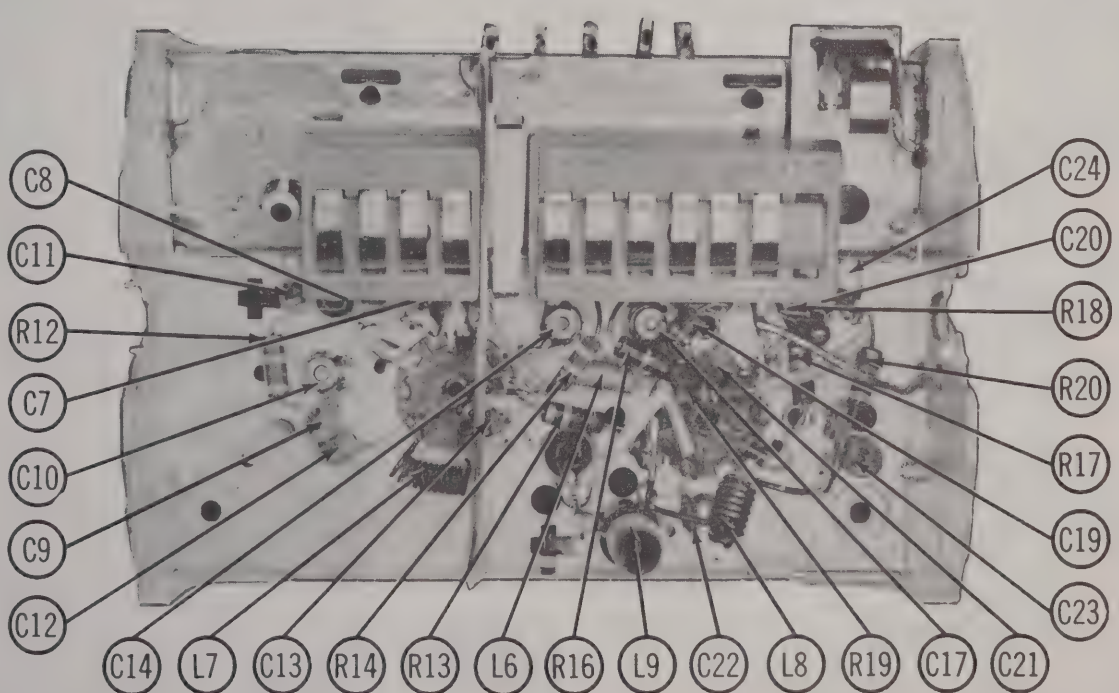
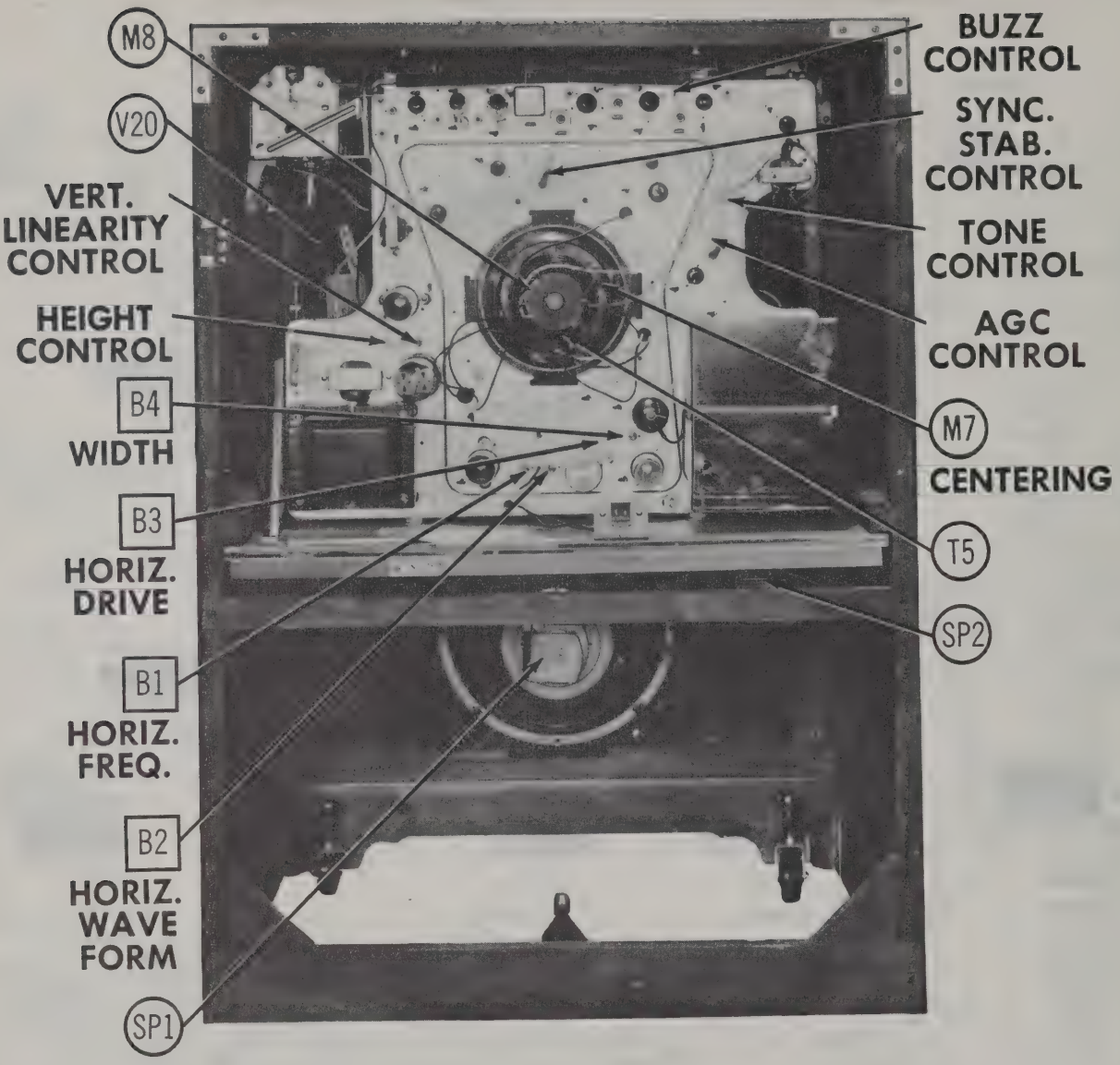
UHF-VHF TUNER SCHEMATIC



RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern. Set the contrast control for normal contrast.

1. Set the horizontal hold control to its mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

2. Connect the vertical amplifier of an oscilloscope thru 10MMF to point ◈ . Connect the low side to chassis. Adjust the waveform slug (B2) until a waveform similar to Fig. 6 is obtained. While making this adjustment, keep the picture in sync with the horizontal hold control and if necessary, B1.

3. With picture in sync, turn contrast control fully counter clockwise and the brightness control clockwise so that the picture appears to be washed out. Turn the horizontal drive control (B3) clockwise until a white vertical line appears and then back slightly counter clockwise until the line disappears.

4. Adjust the width control (B4) until the picture just fills the picture mask horizontally. Reset contrast and brightness controls for normal picture.

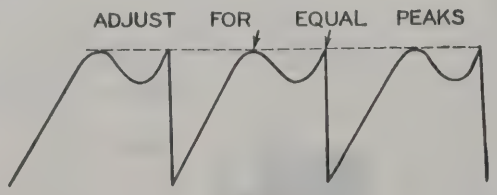
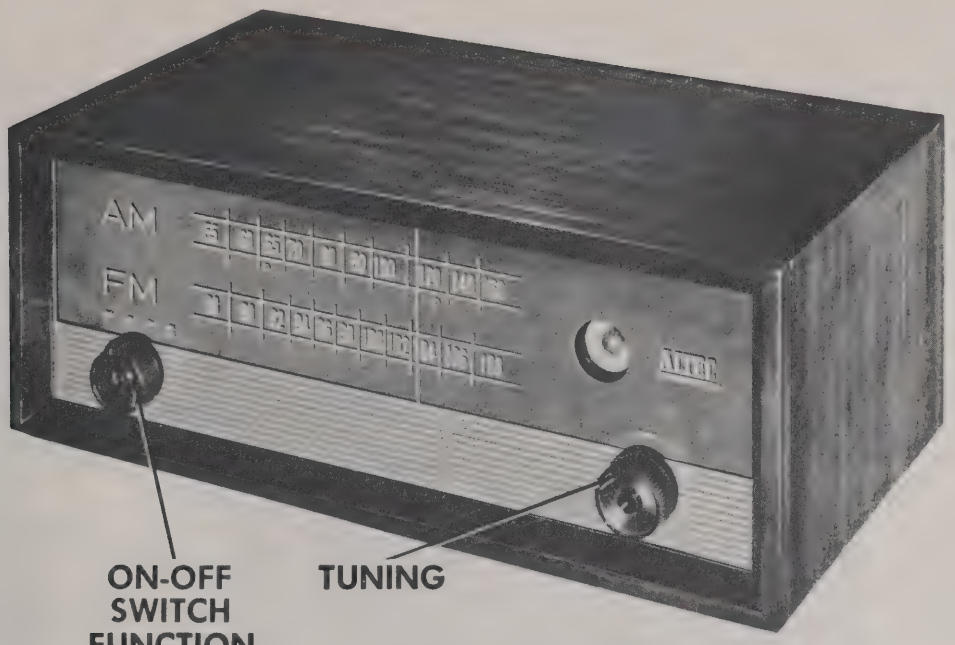


FIG. 6

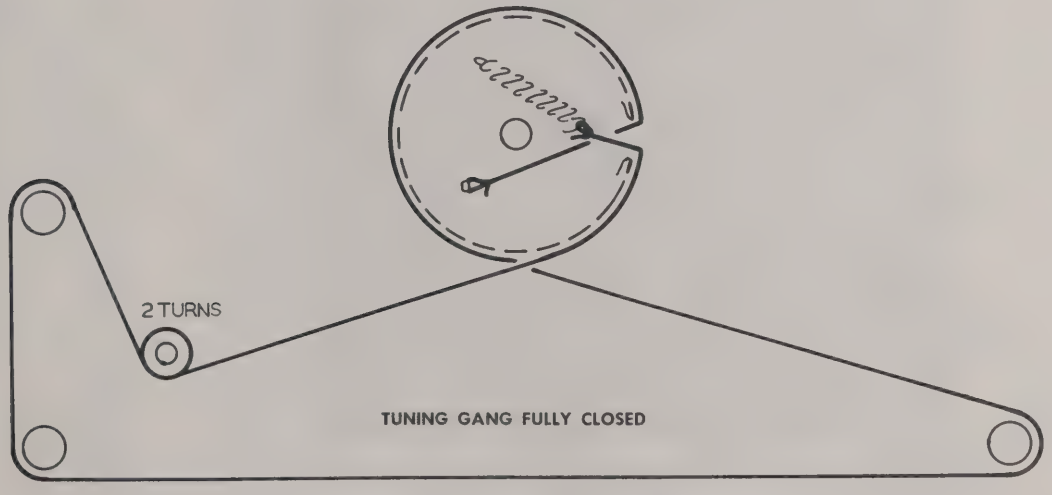
ALTEC LANSING
MODEL 304A



PROPERTY OF
L. F. BLANKENSHIP
3004 MEADE ST.
DENVER, COLORADO

ALTEC LANSING
MODEL 304A

TRADE NAME	Altec Lansing Model 304A		
MANUFACTURER	Altec Lansing Corp., 9356 Santa Monica Blvd., Beverly Hills, Calif.		
TYPE SET	AC Operated FM-AM Superheterodyne Tuner		
TUBES	Thirteen		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	.32 Amp. @ 117 Volts AC
TUNING RANGE—	BROADCAST 540KC-1620KC	FREQ. MOD.	88MC-108MC



DIAL CORD STRINGING

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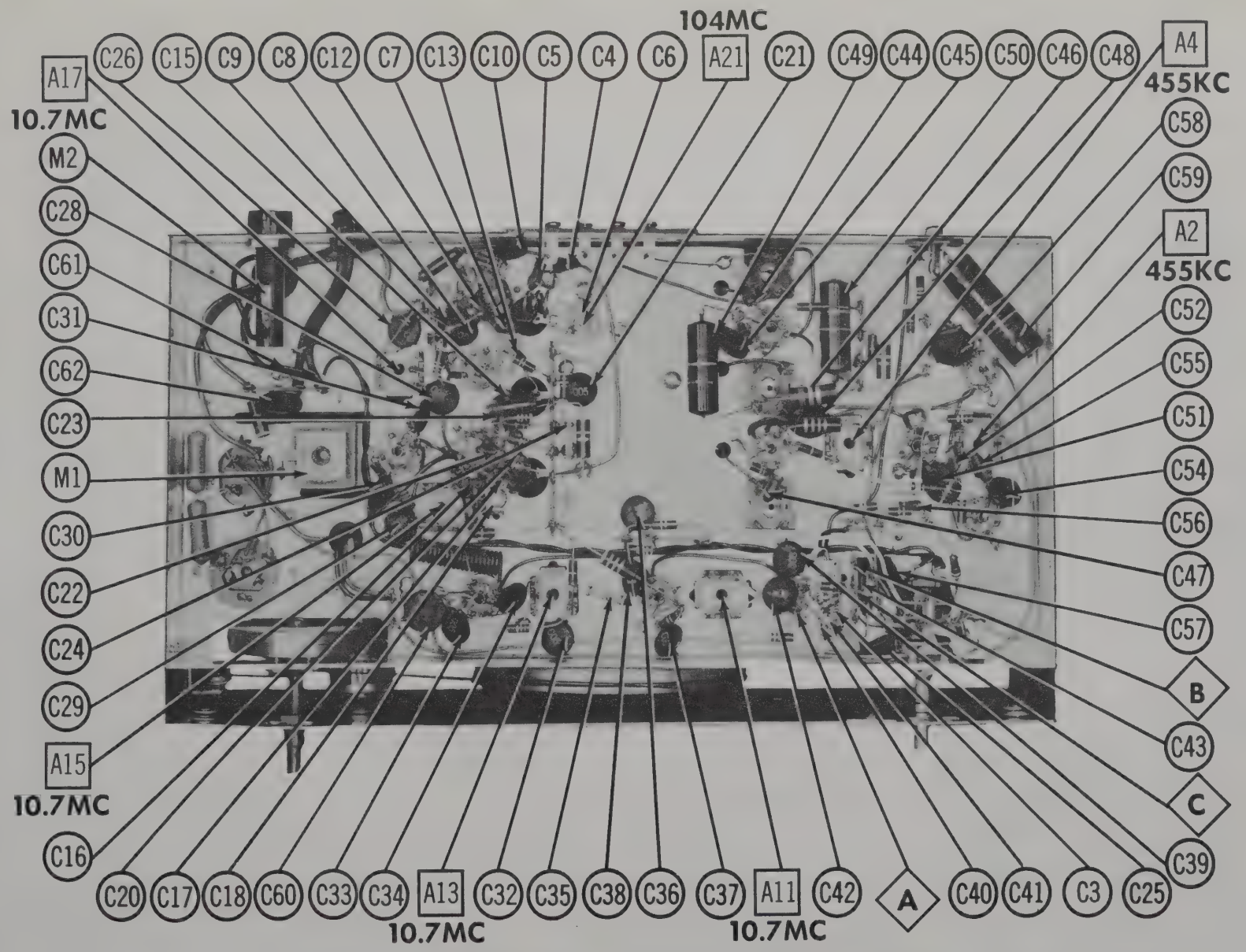
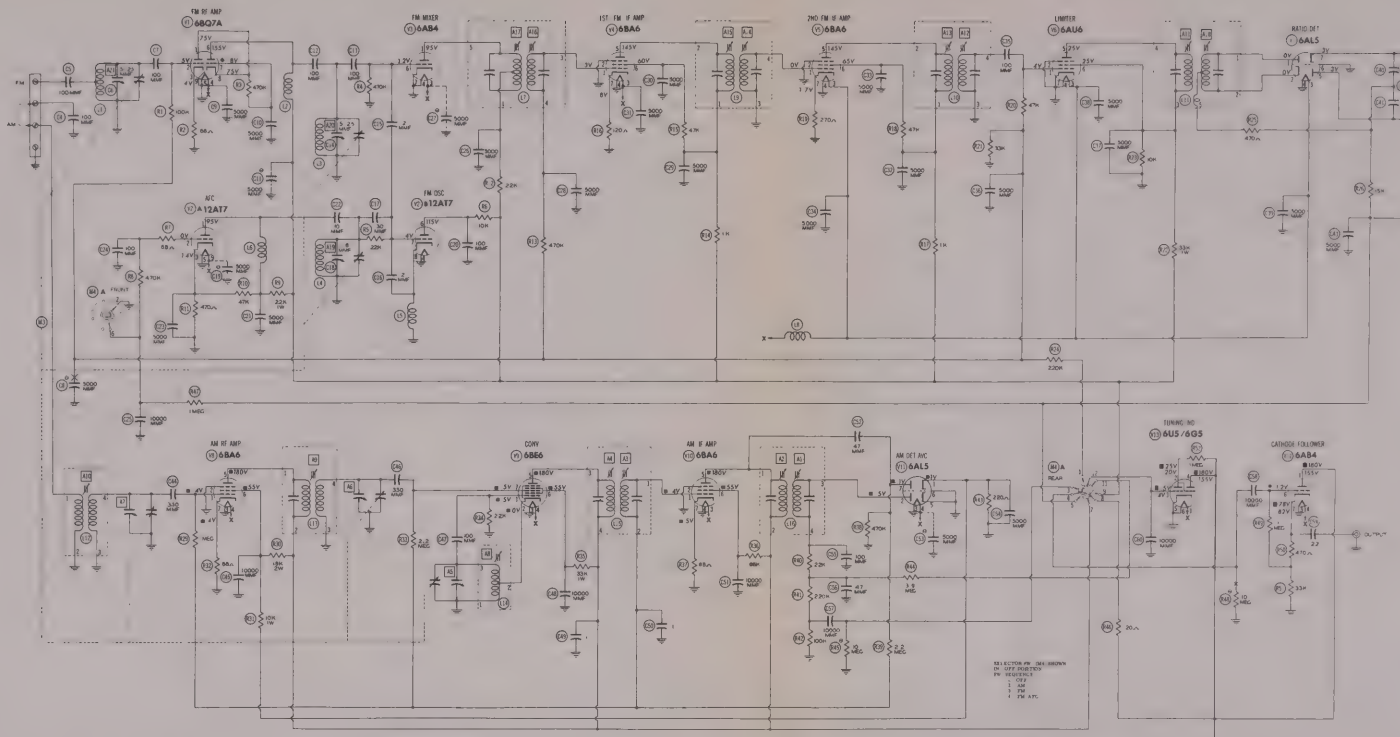


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



Item	Ant	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BQ7A	OFF	-3.9V DC	88V	0V	5V	115V DC	OFF	OFF	0Ω
V2	6BA6*	115V DC	-2.5V DC 10mA	47.0V	6.3V	5V	9.2V DC	22.5V DC	6.3V	0Ω
V3	6AB4	105V DC	TP	3.0V	6.3V	0V DC	4.7V DC	5.0V DC	0V	0Ω
V4	6BA6	105V DC	0V	3.0V	6.3V	1.6V DC	15V DC	12V DC	0V	0Ω
V5	6BA6	0V	0V	3.0V	6.3V	1.6V DC	15V DC	12V DC	0V	0Ω
V6	6AU6	80V DC	0V	3.2V	6.3V	130V DC	125V DC	0V	0V	0Ω
V7	6AL5	105V DC 10mA	0V	0V	6.3V	5.0V DC	0V	5.0V DC	0V	0Ω
V8	6BA6	0V	0V	0V	6.3V	1.6V DC	15V DC	12V DC	0V	0Ω
V9	6U5	105V DC	0V	0V	6.3V	1.6V DC	15V DC	12V DC	0V	0Ω
V10	6BE6	105V DC	0V	0V	6.3V	1.6V DC	15V DC	12V DC	0V	0Ω
V11	6AL5	220V DC	105V DC	0V	6.3V	0V	0V	6.2V DC	0V	0Ω
V12	6AB4	0V DC	TP	0V	6.3V	0V	0V	0V	0V	0Ω
V13	6U5/6G5	0V DC	105V DC	0V	6.3V	0V	0V	0V	0V	0Ω

RESISTANCE MEASUREMENTS
ALL MEASUREMENTS TAKEN IN FM POSITION UNLESS OTHERWISE INDICATED
* MEASURED IN FM AFC POSITION
+ MEASURED IN FM AFC POSITION
● MEASURED IN AM POSITION
▼ MEASURED FROM PIN 1 OF V12
TP TEST POSITION
FP FLY POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DENOTES CHASSIS GROUND

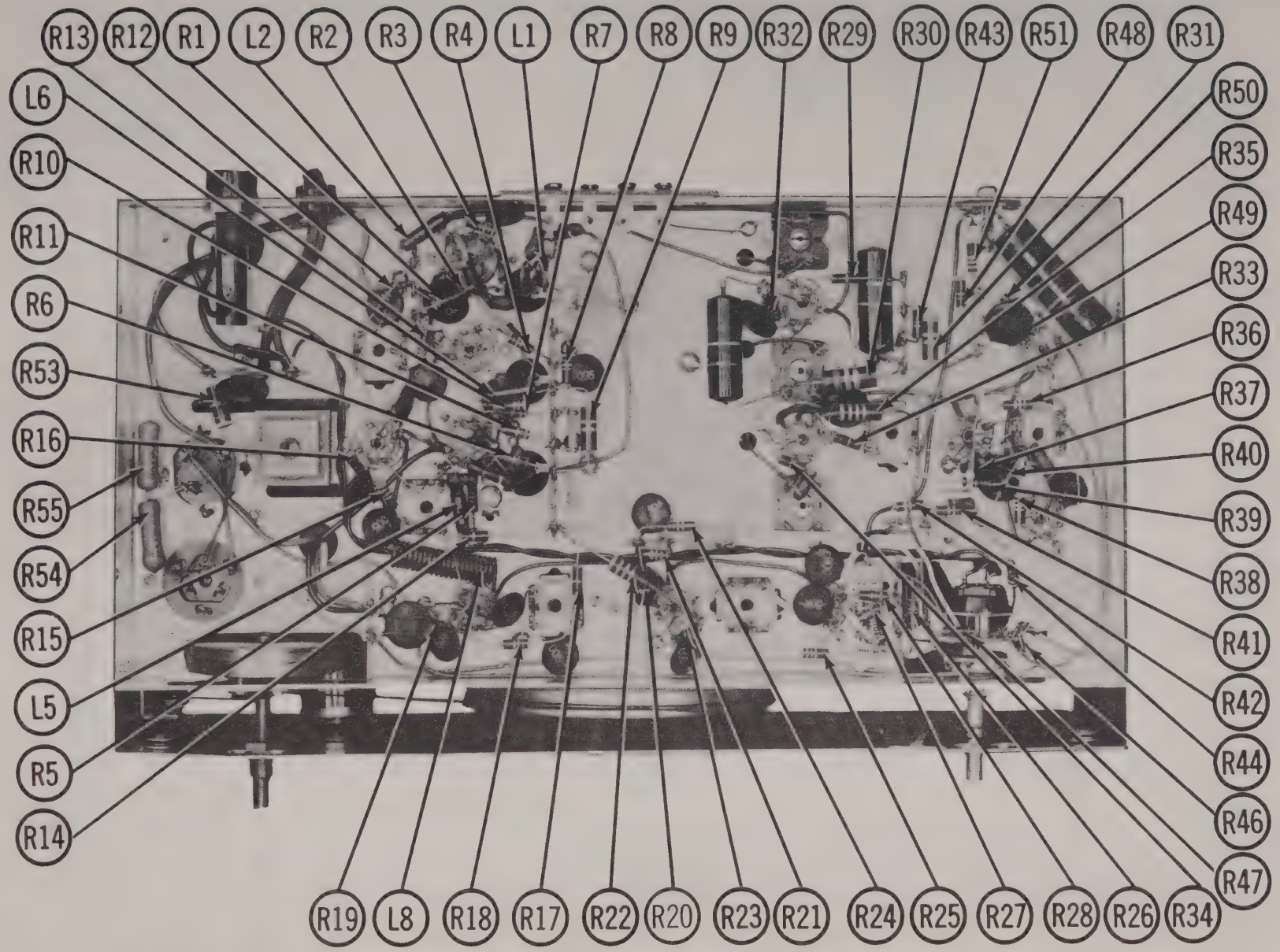
SWITCH ON SELECTOR SWITCH

1 DC voltage measurements taken with vacuum tube voltmeter
AC voltages measured at 300 ohms per V.
2 Socket connections are shown as bottom views.
3 Line voltage variations may cause deviation readings.
4 Loop coil is connected at 1/3 turn from voltage readings.
5 Marking, tolerance or component values of a 5% capacitor's normal or ± 10% in voltage and resistance readings.
6 Vacuum current at max. knob, no signal, approx. 1.5 V voltage measurements

AM IF = 455 KC
FM IF = 10.7 MC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

319-3



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set dial pointer accordingly to frequencies printed on back side of dial back plate.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 6BE6 (V9). Low side to chassis.	455KC (400~ Mod.)	AM	Tuning gang fully open	Across C50 (AVC)	A1, A2, A3, A4	Adjust for maximum deflection.
2.	200MMF	High side to AM antenna terminal. Low side to chassis.	1400KC	"	1400KC	"	A5, A6, A7	"
3.	"	"	600KC	"	600KC	"	A8, A9, A10	Adjust for maximum deflection in order given. Repeat steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD.	High side to pin 6 (grid) of 6AB4 (V3). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A11, A12, A13, A14, A15, A16, A17	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND SCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 6 (grid) of 6AB4 (V3). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. amp. to point Ⓐ. Low side to chassis.	A11, A12, A13, A14, A15, A16, A17	Disconnect stabilizing capacitor (C3). Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to point Ⓒ.	A18	Reconnect stabilizing capacitor (C3). Adjust so that 10.7MC occurs at center of cross-over lines similar to Fig. 2. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL. SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	270Ω Carbon Resistor	High side thru 270Ω to FM antenna terminal. Low side to chassis.	104MC	FM	104MC	DC probe to point Ⓐ. Common to chassis.	A19	Adjust for maximum deflection.
7.	"	"	92MC	"	92MC	"	L4	Expand or compress coil turns for maximum deflection.
8.	"	"	104MC	"	104MC	"	A20, A21	Adjust for maximum deflection.
9.	"	"	92MC	"	92MC	"	L3, L1	Expand or compress coil turns for maximum deflection. Repeat step 6, 7, 8, and 9 until no further improvement can be made.

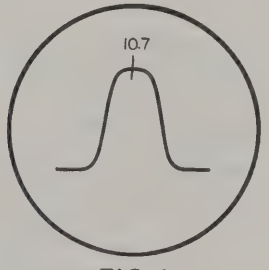


FIG. 1

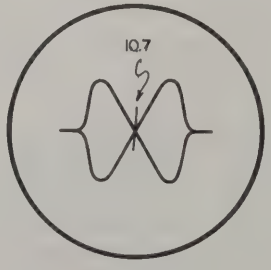


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA: Altec Lansing PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	NOTES
V1	FM RF Amplifier	6BQ7A	6BQ7A	
V2	FM Oscillator-AFC	12AT7	12AT7	
V3	FM Mixer	6AB4	6AB4	
V4	1st FM IF Amplifier	6BA6	6BA6	
V5	2nd FM IF Amplifier	6BA6	6BA6	
V6	Limiter	6AU6	6AU6	
V7	Ratio Detector	6AL5	6AL5	
V8	AM RF Amplifier	6BA6	6BA6	
V9	AM Converter	6BE6	6BE6	
V10	AM IF Amplifier	6BA6	6BA6	
V11	AM Det. -AVC	6AL5	6AL5	
V12	Cathode Follower	6AB4	6AB4	
V13	Tuning Indicator	6U5/6G5	6U5/6G5	

ELECTROLYTIC CAPACITORS

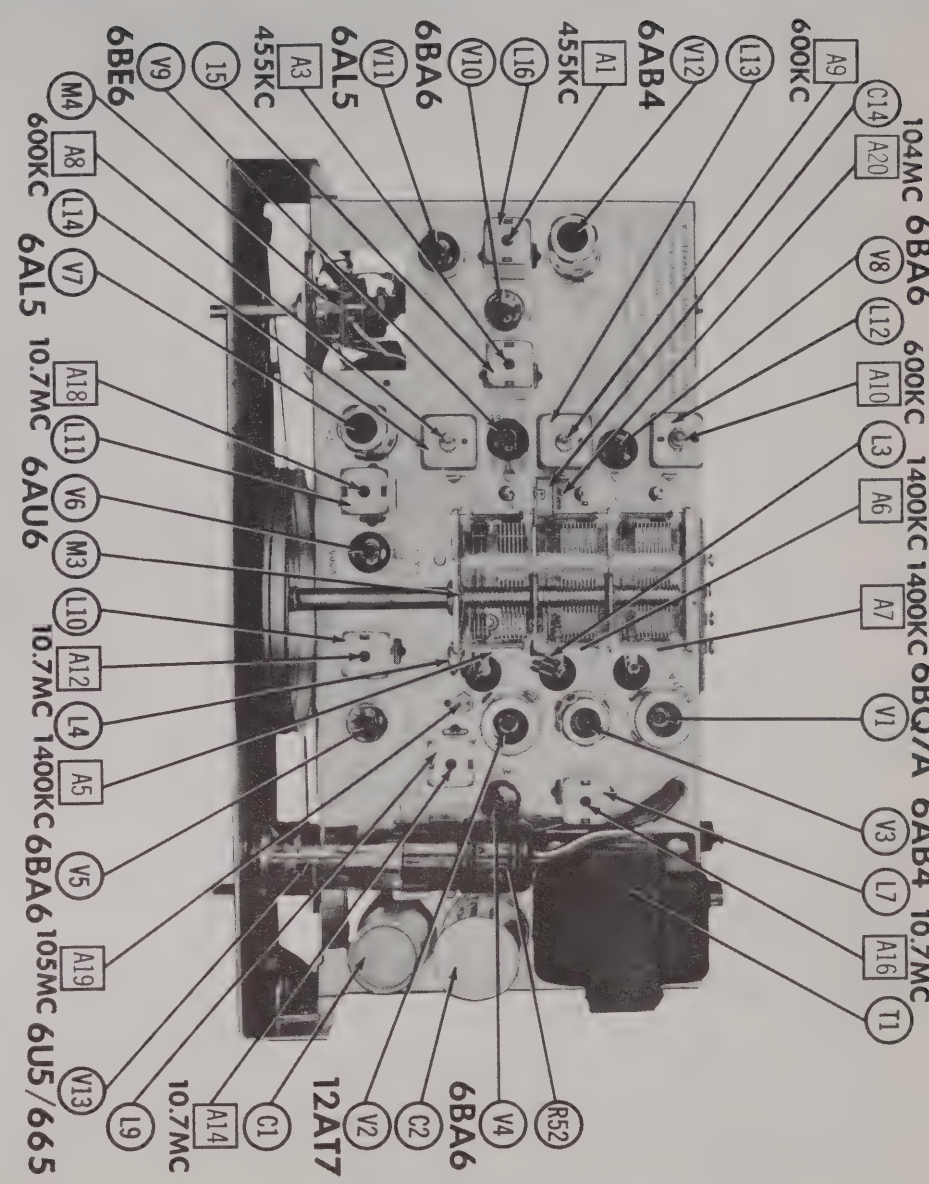
ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: Altec Lansing PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	80	200		AFH1-31	A031	FP128	TMS33	S-155	TVL-2460
C2A	▲ 80	200		AFH3-148	C105	FP370	TMT145	T-730	TVL-3761
B	▲ 40	450							
C	■ 10	450							
C3	25	25		PRS25V25	BR252	TC26	TD-25-25	FM-0225	TVA-1205

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Altec Lansing PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C5	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C6	5-25				822-AZ		557-5			
C7	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C8	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	Note 1
C9	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C10	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C11	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	Note 1
C12	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C13	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C14	5-25				822-AZ		557-5			
C15	2									
C16	2									
C17	30			NPO-SI30	TCZ-30	TZ17	NPOL-300		5TCC-Q3	
C18	1-8						532-10			
C19	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	Note 1
C20	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C21	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C22	10			NPO-SI10	TCZ-10	TZ09	NPOA-100	ZT-541	5TCC-Q1	
C23	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C24	100			N750-SI100	TCN-100	TN22	N750L-101	NT-531	5TCU-T1	
C25	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C26	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C27	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	Note 1
C28	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C29	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C30	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C31	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C32	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C33	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C34	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C35	100			N750-SI100	TCN-100	TN22	N750L-101	NT-531	5TCU-T1	
C36	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C37	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C38	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	Note 1
C39	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C40	100			N750-SI100	TCN-100	TN22	N750L-101	NT-531	5TCU-T1	
C41	100			N750-SI100	TCN-100	TN22	N750L-101	NT-531	5TCU-T1	
C42	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Altec Lansing PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C43	5000			DI-005	DD-5032		GP2-333-502	UC-525	5GA-D5	
C44	330			SI330	D6-331	TP43	GP2K-331	UC-5333	5GA-T33	
C45	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C46	330			SI330	D6-331	TP43	GP2K-331	UC-5333	5GA-T33	
C47	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C48	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C49	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C50	.1	400		P488N-1	DF 104	CUB4P1		PT401	4TM-P1	
C51	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C52	47			SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C53	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	Note 1
C54	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C55	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C56	47			SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C57	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C58	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C59	.22	400		P488N-22		CUB4P22		PT4022	4TM-P22	
C60	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C61	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C62	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	

Note 1. Not used in some versions.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Altec Lansing PART No.	IRC PART No.	NOTES
R1	100KΩ	½		BTS-100K	
R2	68Ω	½		BTS-68	
R3	470KΩ	½		BTS-470K	
R4	470KΩ	½		BTS-470K	
R5	22KΩ	½		BTS-22K	
R6	10KΩ	½		BTS-10K	
R7	68Ω	½		BTS-68	
R8	470KΩ	½		BTS-470K	
R9	22KΩ	1		BTA-22K	
R10	47KΩ	½		BTS-47K	
R11	470Ω	½		BTS-470	
R12	22KΩ	½		BTS-22K	
R13	470KΩ	½		BTS-470K	
R14	1000Ω	½		BTS-1000	
R15	47KΩ	½		BTS-47K	
R16	120Ω	½		BTS-120	
R17	1000Ω	½		BTS-1000	
R18	47KΩ	½		BTS-47K	
R19	270Ω	½		BTS-270	
R20	47KΩ	½		BTS-47K	
R21	33KΩ	½		BTS-33K	
R22	33KΩ	1		BTA-33K	
R23	10KΩ	½		BTS-10K	
R24	220KΩ	½		BTS-220K	
R25	470Ω	½		BTS-470	
R26	15KΩ	½		BTS-15K	
R27	5600Ω 5%	½		BTS-5600 5%	
R28	5600Ω 5%	½		BTS-5600 5%	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Altec Lansing PART No.	IRC PART No.	NOTES
R29	1Meg	½		BTS-1Meg	
R30	18KΩ	2		BTB-18K	
R31	10KΩ	1		BTA-10K	
R32	68Ω	½		BTS-68	
R33	2.2Meg	½		BTS-2.2Meg	
R34	22KΩ	½		BTS-22K	
R35	33KΩ	1		BTA-33K	
R36	68KΩ	½		BTS-68K	
R37	68Ω	½		BTS-68	
R38	470KΩ	½		BTS-470K	
R39	2.2Meg	½		BTS-2.2Meg	
R40	22KΩ	½		BTS-22K	
R41	220KΩ	½		BTS-220K	
R42	100KΩ	½		BTS-100K	
R43	220Ω	½		BTS-220	
R44	3.9Meg	½		BTS-3.9Meg	
R45	10Meg	½		BTS-10Meg	Note 1
R46	120Ω	½		BTS-120	
R47	1Meg	½		BTS-1Meg	
R48	10Meg	½		BTS-10Meg	Note 1
R49	1Meg	½		BTS-1Meg	
R50	470Ω	½		BTS-470	
R51	33KΩ	½		BTS-33K	
R52	1Meg	½		BTS-1Meg	
R53	47Ω	1		BTA-47	
R54	1500Ω	5		PW7-1500	
R55	1500Ω	5		PW7-1500	Note 2

Note 1. Not used in some versions.
Note 2. Some versions use a 1200Ω 5W (WW) resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Altec Lansing PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .32A	110VAC @ .033A	6.3VAC @ 3.65A		6166					

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Altec Lansing PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FM Ant. Coil	0Ω						Tapped
L2	RF Coil	.4Ω					4529	5 Microhenries
L3	FM RF Coil	0Ω						
L4	FM Osc. Coil	0Ω						
L5	Cathode Choke	.4Ω					4529	5 Microhenries
L6	RF Coil	.4Ω					4529	5 Microhenries
L7	1st FM IF	.5Ω	.8Ω	1607-7				
L8	Fil. Choke	0Ω			19-1001		4604	1.9 Microhenries
L9	2nd FM IF	.7Ω	.7Ω	1607-6	16-3487	FM-254	1463	
L10	3rd FM IF	.7Ω	.7Ω	1607-6	16-3487	FM-254	1463	
L11	Ratio Det.	1.6Ω	.9ΩCT	2607-3	17-3497	FM-255	1465	Tertiary Winding=.5Ω
L12	AM Ant. Coil	41Ω	12Ω	747				
L13	AM RF Coil	41Ω	7Ω	748				
L14	AM Osc. Coil	4.3Ω		749				Tapped @ .5Ω
L15	1st AM IF	26Ω	26Ω	1655-11	16-6758	BC-352	12-C1	
L16	2nd AM IF	18Ω	18Ω	1655-7	16-6758	BC-353	12-C2	

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA Altec Lansing PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.033A		1007	D-6222	8S75D	8J1 ①	50 ①	① 2 required

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Altec Lansing PART No. FUSE	Altec Lansing PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	3A 250V			312003. (3AG 3A)	341001	AGC 3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	Altec Lansing PART No.	NOTES
M3	Tuning Cap.	743	6 Gang (AM Sections: 29-450MMF, 29-445MMF, 38-220MMF)
M4A	Switch	1286	Selector (Rotary-Wafer Type)
B	Switch		Power Off (SPST)

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CAPEHART MODEL 8T216 SERIES

TRADE NAME	Capehart Models 8T216 Series, 9T246 Series, 17C216 Series (Ch. CX-43 Series)
MANUFACTURER	Capehart-Farnsworth Corp., Fort Wayne, Indiana
TYPE SET	Television Receiver
TUBES	Seventeen
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.3 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 16
Parts List and Descriptions 12, 13, 14
Photographs
Cabinet-Rear View 16
Capacitor & Alignment Identification 3, 10
Chassis-Top View 7
RF Tuner 11, 15
Photographs (Cont)
Resistor & Inductor Identification 4, 9
Resistance Measurements 8
Servicing in the Field 1
Schematic 2
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

CAPEHART
CHASSIS CX-43 Series

L. F. B. ANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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DISASSEMBLY INSTRUCTIONS

CABINET REMOVAL

1. Remove 8 push-on type control knobs from side panel of cabinet.

2. Remove 5 wood screws and 1 metal screw. Remove rear cover.

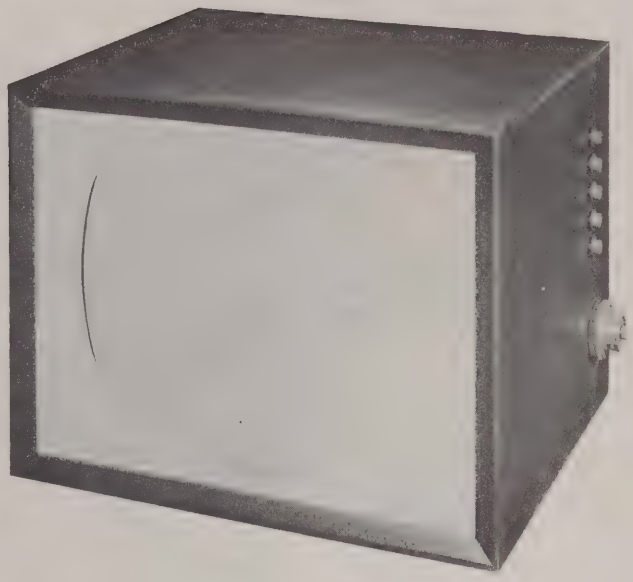
3. Remove 2 wood screws holding AC interlock and antenna terminal bracket.

4. Disconnect speaker leads.

5. Remove 4 mounting board bolts and 1 wood screw holding cabinet to mounting board.

6. Lift cabinet from mounting board.

7. Remove 2 speaker nuts. Remove speaker.



MODELS	CHASSIS
8T216 Series, 9T246 Series, 17C216 Series	CX-43 Series

CAPEHART
CHASSIS CX-43 Series

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of VHF tuner oscillator adjustments, it is necessary to remove the chassis from the cabinet. (See disassembly instructions).

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning , it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator it is necessary to remove the rear cover and supply power to the chassis. Adjustment is located on the tube side of the chassis. Set the horizontal hold control to the center of its range and adjust the horizontal frequency slug (L38) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the buzz control (R8) for maximum volume and minimum buzz.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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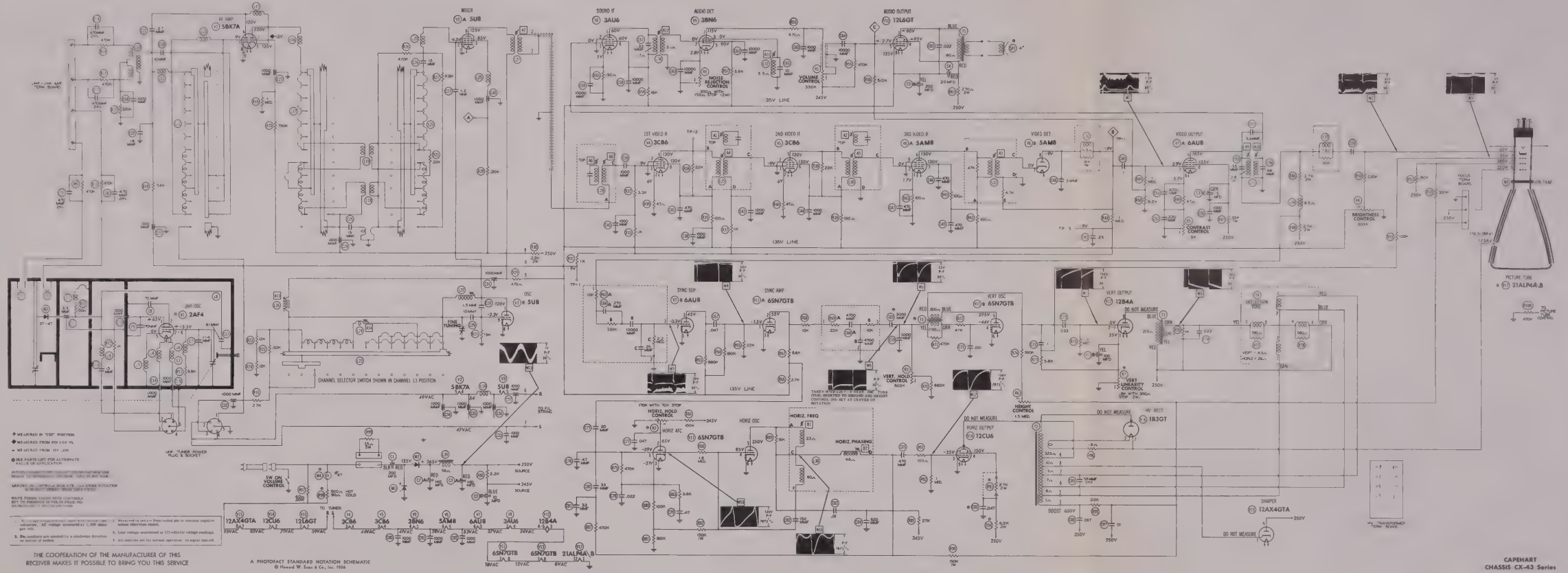
CAPEHART
CHASSIS CX-43 Series
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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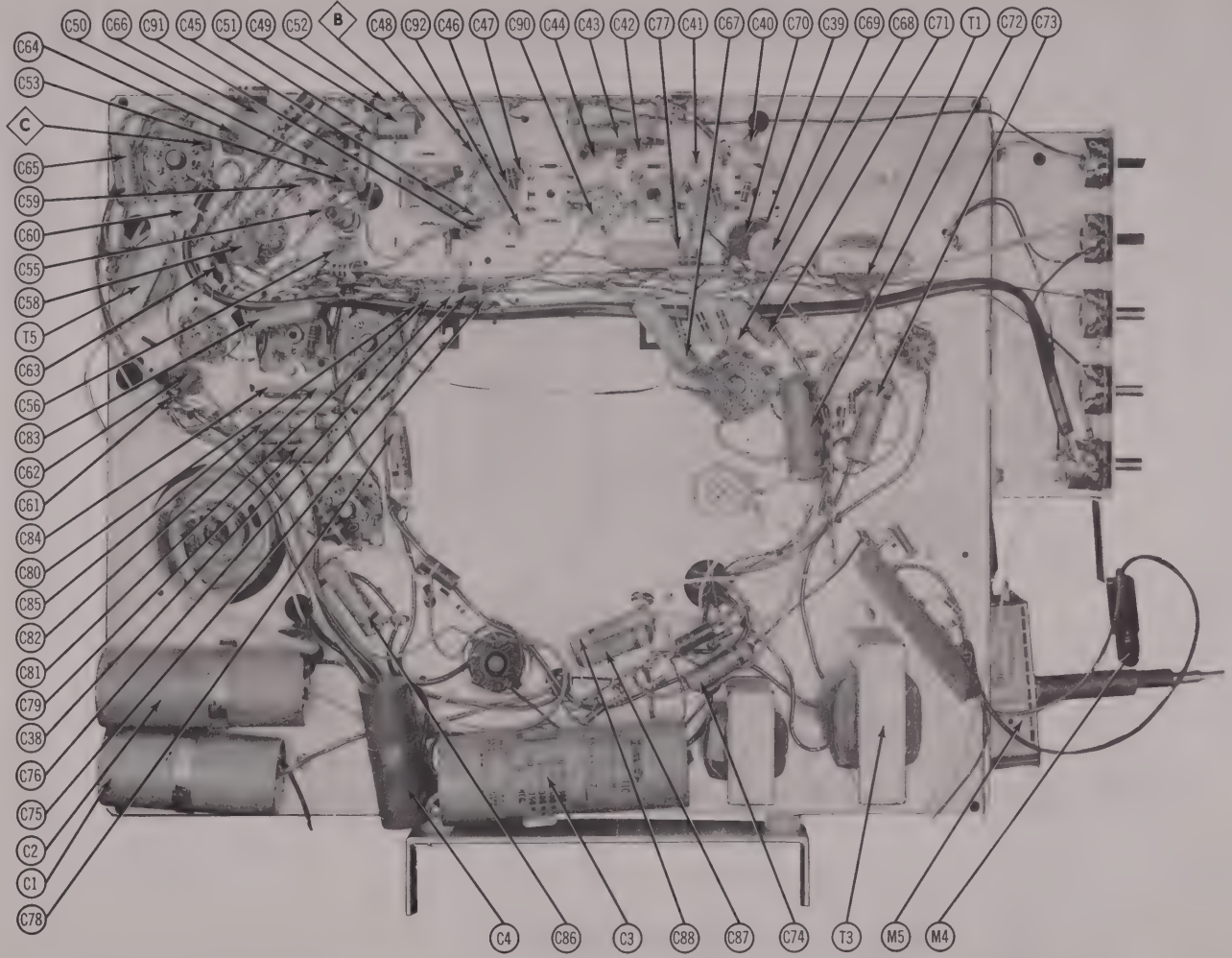
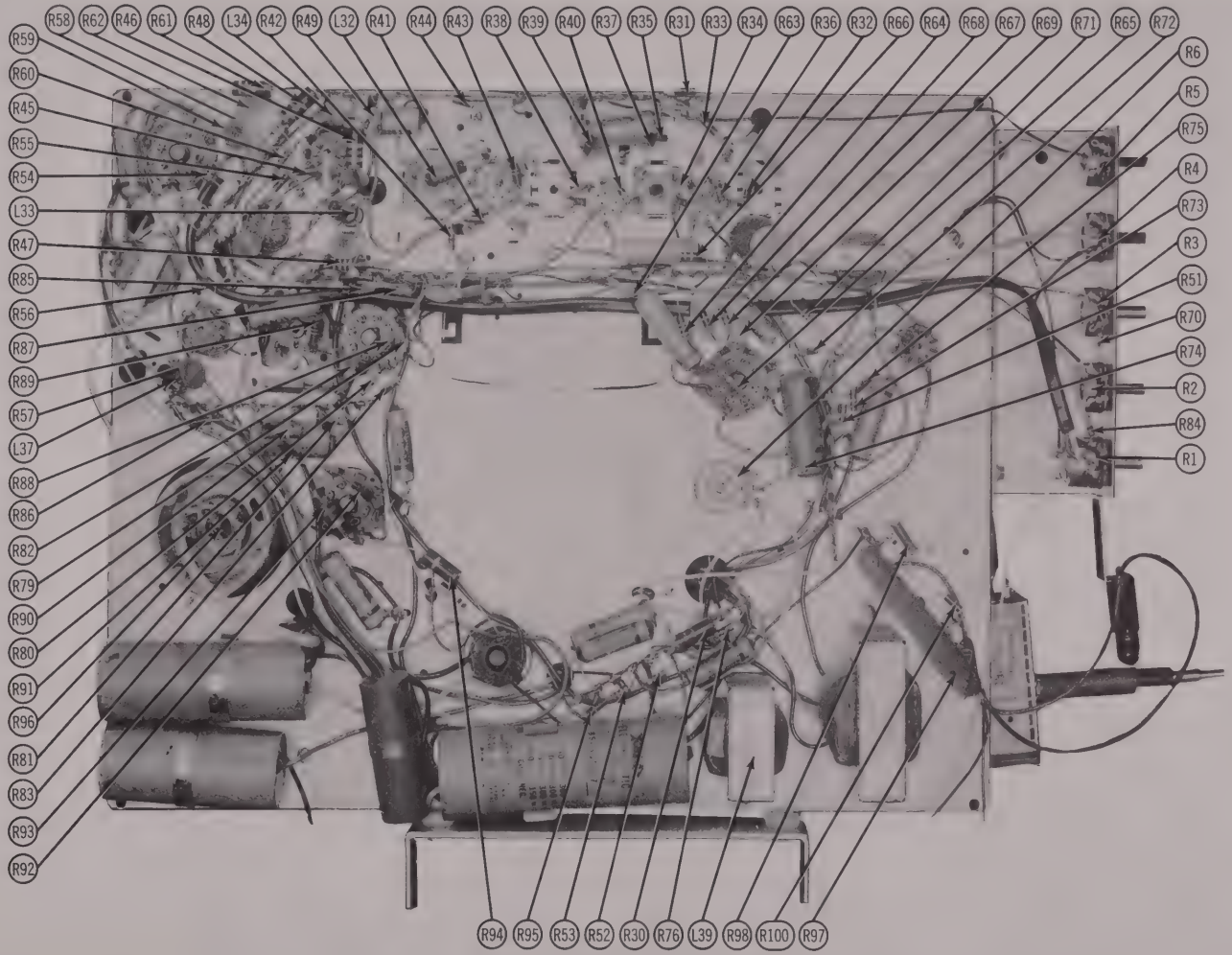
CAPEHART
CHASSIS CX-43 Series

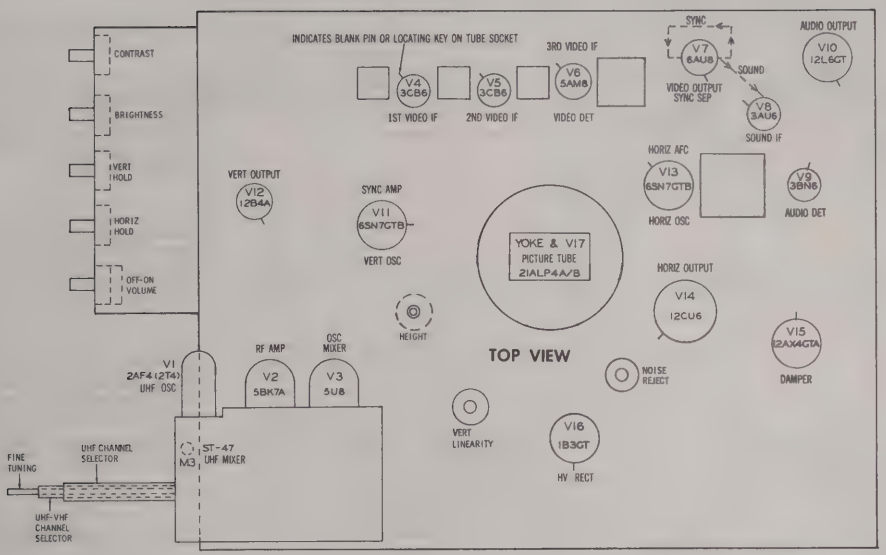


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TUBE PLACEMENT CHART



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L. F. ANDERSHIP
3321 MEADE ST.
DENVER, COLORADO

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

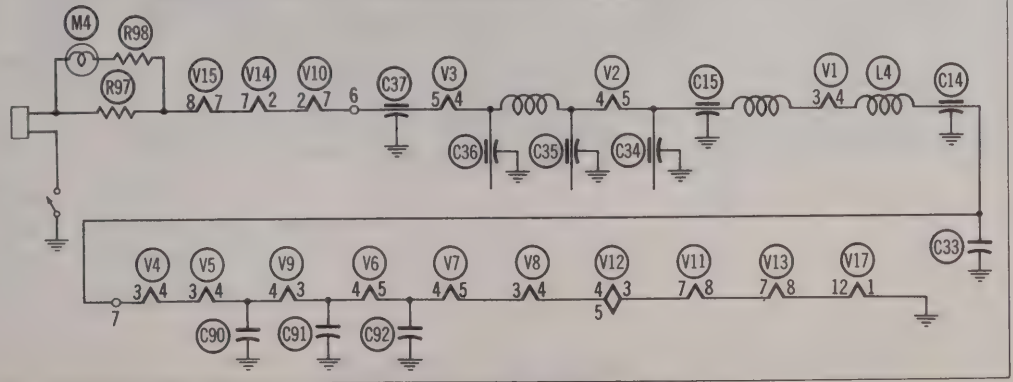
POWER SUPPLY FAILURE
No raster, no sound - **Selenium Rectifiers (M1 & M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, V6, V7, V10 (V1 UHF only)**
No pic, no sound, has snow - **V2, V3, V4**
No pic, has sound, has raster - **V7, V17**
Has pic, no sound - **V8, V9, V10**

SYNC FAILURE
No vert. sync - **V11**
No horiz. sync - **V11, V13**
No vert. or horiz. sync - **V7, V11**

SWEEP FAILURE
No raster, has sound - **V13, V14, V15, V16, V17**
No vertical deflection - **V11, V12**
Poor vert. linearity or foldover - **V11, V12**
Poor horiz. linearity or foldover - **V13, V14, V15**
Narrow picture - **V13, V14, V15, V16, M1, M2**
Vert. off freq. - **V11**
Horiz. off freq. - **V11, V13**

NOTE: Since this receiver employs tubes used in series-parallel filament network, an open filament in any tube in series may cause the set to be inoperative. (See circuit below).



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from chassis. Do not remove the horizontal multivibrator tube (V13) to disable the high voltage.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to the ungrounded side of C43. Connect the positive lead to chassis.
Use high sweep generator output to make trap adjustment A1, A2, A6 and A7 visible on scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD Capacitor	High side thru .001MFD to pin 1 (grid) of 3CB6 (V4). Low side to chassis.	44MC (10MC Swp.)	41.25MC	Any	Vert. amp. thru 10KΩ to point Ⓑ. Low side to chassis.	A1	Disconnect shielded tuner lead from terminal "A" of L28. If a separate marker generator is used, couple it loosely thru 10KΩ to pin 1 of V4. Adjust for MINIMUM response at marker frequency.
2.	"	"	"	47.25MC	"	"	A2	"
3.	"	"	"	44.1MC	"	"	A3	Attenuate sweep generator output for normal response on scope. Adjust A3 for maximum marker amplitude with MINIMUM tilt.
4.	"	"	"	42.9MC	"	"	A4	Adjust A4 to position 42.5MC marker within 50% of maximum amplitude on response curve.
5.	"	"	"	45.3MC	"	"	A5	Adjust A5 to position 45.75MC marker within 50% of maximum amplitude on response curve. Repeat steps 1 thru 5. Reconnect shielded tuner lead to terminal "A" of L28.
6.	"	High side thru .001MFD to point Ⓐ (on back of tuner terminal). Low side to chassis.	"	47.25MC	Any non-interfering channel	"	A6	Adjust for MINIMUM response at 47.25MC marker frequency.
7.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	189MC (10MC Swp.)	187.25MC 191.75MC	9	Vert. amp. thru 10KΩ to point Ⓑ. Low side to chassis.		Adjust fine tuning control until sound marker falls in trap. Fig. 1.
8.	"	"	"	"	"	Vert. amp. thru detector (Fig. 3) to pin 5 and 6 of 3CB6 (V4). Low side to chassis.	A7, A8	Connect a clip lead across pin 5 (plate) and pin 6 (screen) of V5. Adjust A7 and A8 for response curve similar to Fig. 1. Adjust for maximum amplitude and MINIMUM tilt to position of Video marker. Remove short across pin 5 and 6 of V5.
9.	Direct	High side to an ungrounded tube shield over converter tube (V3). Low side to chassis.	44MC (10MC Swp.)	39.75MC 41.25MC 42.25MC 45.75MC 47.25MC	Any non-interfering channel	Vert. amp. thru 10KΩ to point Ⓑ. Low side to chassis.		Check for response similar to Fig. 2. If necessary SLIGHTLY retouch A3 thru A8 for desired response. A1 and A2 should not be retouched.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR, AM SIGNAL GENERATOR AND OSCILLOSCOPE

Preset the noise rejection control (R8) 90 degrees from maximum clockwise rotation.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.001MFD	High side to pin 7 (grid) of 6AU8 (V7). Low side to chassis.	Not used	4.5MC (400∿ Mod)	Any	Vert. amp. thru detector (Fig. 4) to pin 11 (cathode) of picture tube. Low side to chassis.	A9, A10	Connect a clip lead across terminals "C" and "D" of L29. Adjust A9 and A10 for MINIMUM 400∿ indication on scope.
11.	"	"	4.5MC (400∿ Mod.) (50KC Swp.)	4.5MC	"	Vert. amp. to point Ⓒ. Low side to chassis.	A11	Adjust for maximum 400∿ indication on scope. Two peaks will be noted when adjusting A11. Adjust for peak with maximum amplitude.
12.	"	"	"	"	"	"	A12, A10	Attenuate generator output so that signal level is below limiting level of the 6BN6 as evidenced by back ground hiss and noise. Adjust A12 and A10 for maximum response on scope.
13.	"	"	Not used	4.5MC (400∿ Mod.)	"	"	R8	Use high signal generator output and adjust R8 for MINIMUM 400∿ indication on scope.
14.	"	"	4.5MC (400∿ Mod.) (50KC Swp.)	4.5MC	"	"	A11	Retouch A11 for maximum 400∿ indication on scope. Use low generator output. Remove short from L29. Tune in weakest TV station in that area and adjust R8 for MINIMUM buzz and hiss. Tune in strongest station in that area and adjust A11 for clearest sound.

ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ADJUSTMENT

Set the fine tuning control to the center of its range. Set the channel selector to the highest high band channel (7-13) station operating in that area. Adjust the high band oscillator adjustment (A13) for best picture detail.
Set the channel selector switch to the highest low channel (2-6) operating in the area. Adjust the low band adjustment (A14) for best picture detail. Recheck the setting of A13, if it has changed repeat entire procedure.

VHF RF AND MIXER ALIGNMENT

The RF and mixer portion of this tuner have been properly aligned at the factory and are very stable. Alignment of this portion is not recommended in the field.

UHF TUNER ALIGNMENT

In the event the UHF oscillator tube is replaced, it is recommended that several tubes and the one which works best should be used. Alignment of the tuner should not be required in the field.

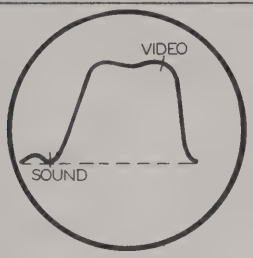


FIG. 1

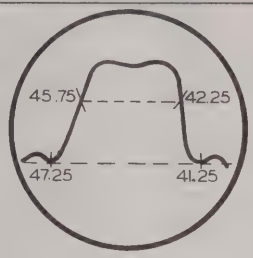


FIG. 2

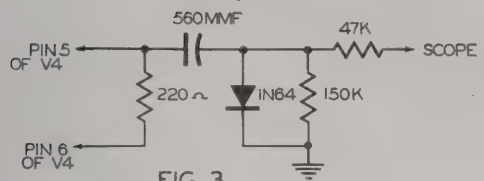


FIG. 3

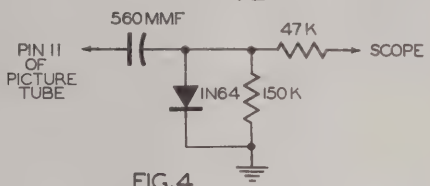
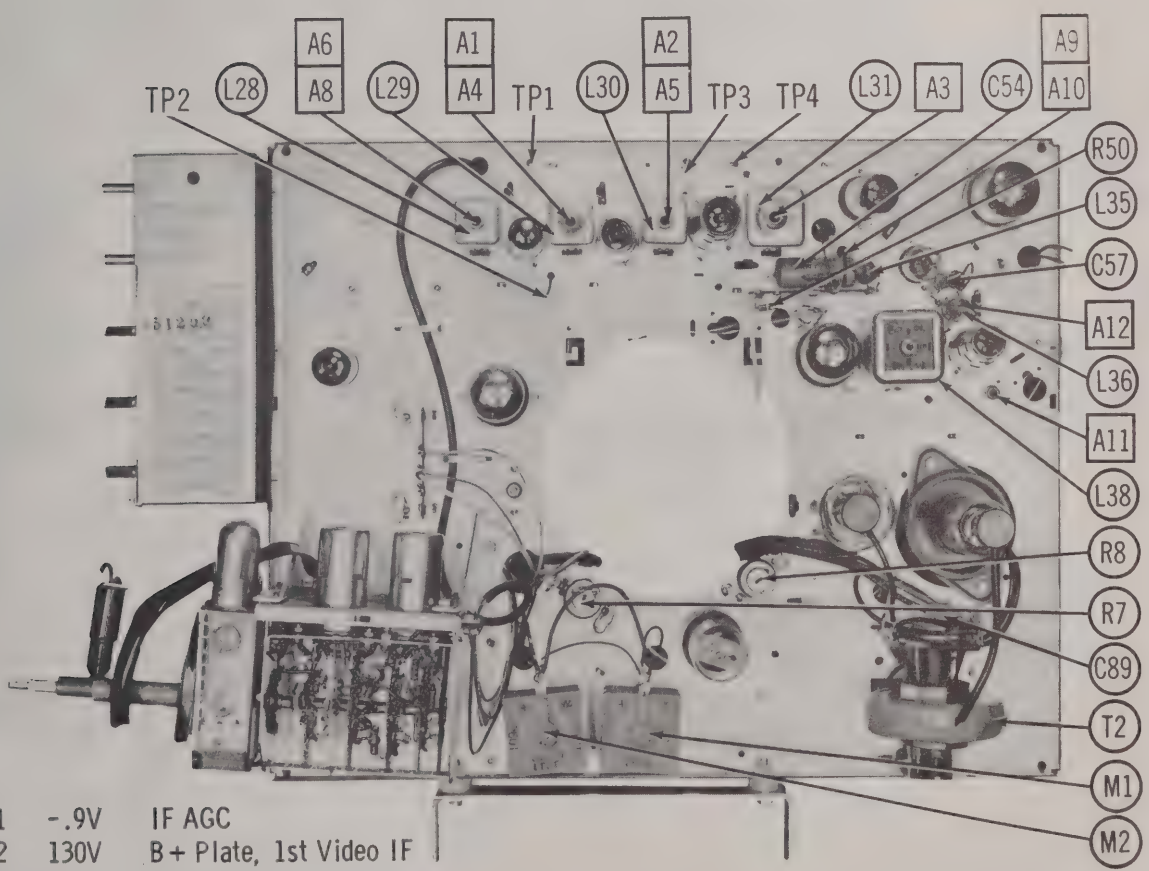


FIG. 4



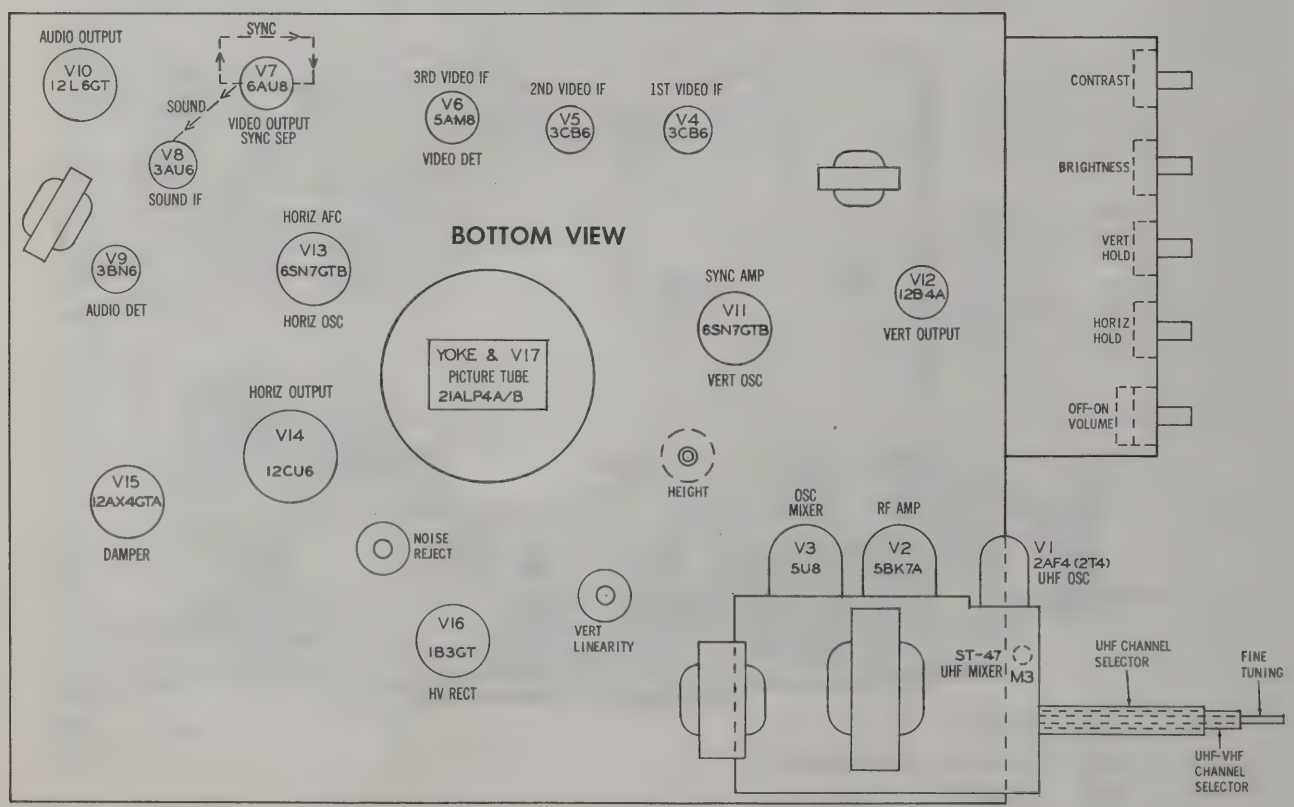
TP1	-.9V	IF AGC
TP2	130V	B+ Plate, 1st Video IF
TP3	-.9V	IF AGC
TP4	-.9V	Video Det Output

CHASSIS TOP VIEW

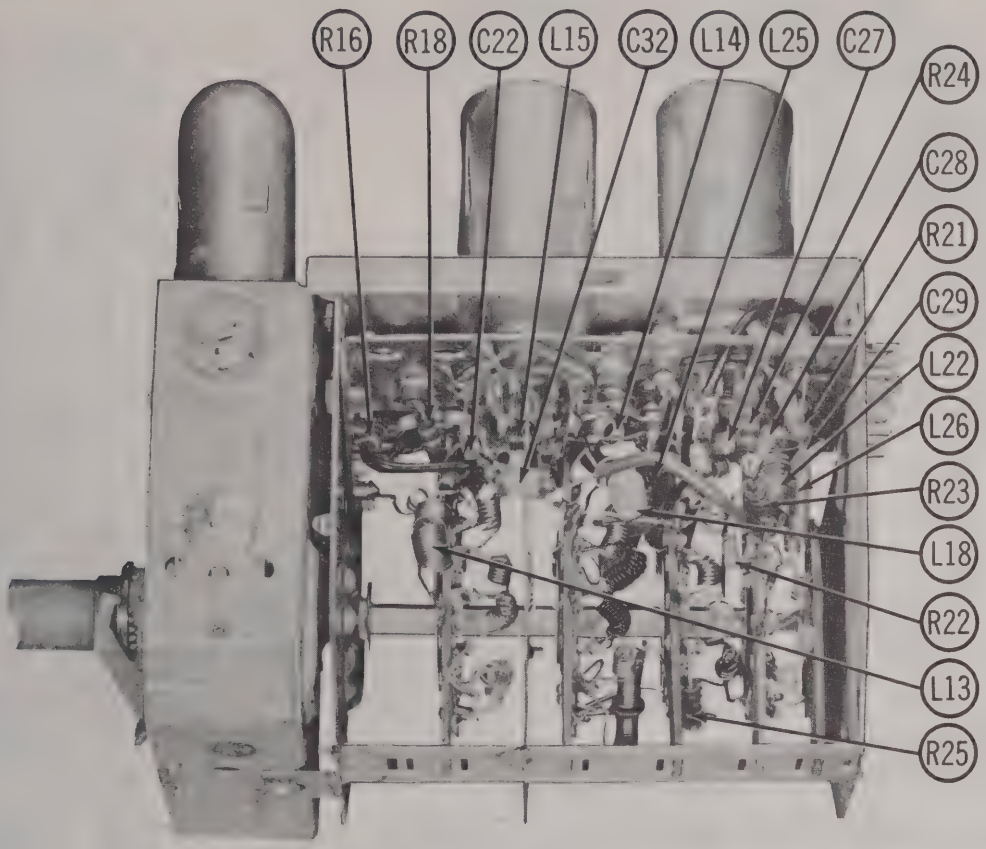
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	2AF4	*■ 4. 1KΩ	6. 8KΩ	12Ω	11Ω	0Ω	6. 8KΩ	*■ 4. 1KΩ		
V 2	5BK7A	† 2. 2KΩ	400KΩ	INF	13Ω	12Ω	INF	1Meg	0Ω	0Ω
V 3	5U8	■ 500Ω	470KΩ	† 120KΩ	13Ω	14Ω	■ 500Ω	0Ω	0Ω	15KΩ
V 4	3CB6	1Meg	47Ω	11Ω	10Ω	■ 100Ω	■ 100Ω	0Ω		
V 5	3CB6	1Meg	47Ω	10Ω	9Ω	■ 100Ω	■ 100Ω	0Ω		
V 6	5AM8	100Ω	. 1Ω	■ 200Ω	8Ω	7Ω	■ 100Ω	. 3Ω	4. 7KΩ	0Ω
V 7	6AU8	0Ω	2. 2Meg	■ 680KΩ	7Ω	6Ω	200Ω	1Meg	† 33KΩ	† 5. 5KΩ
V 8	3AU6	. 8Ω	0Ω	6Ω	5Ω	■ 18KΩ	■ 18KΩ	150Ω		
V 9	3BN6	300Ω	3. 1Ω	8Ω	9Ω	■ 5. 6KΩ	5. 5Ω	† 330KΩ		
V 10	12L6GT	NC	16Ω	† 500Ω	† 330Ω	250KΩ	TP	14Ω	20KΩ	
V 11	6SN7GTB	22KΩ	■ 9. 5KΩ	0Ω	1Meg	▲ 750KΩ	0Ω	4Ω	3Ω	
V 12	12B4A	1. 3KΩ	1. 5Meg	4Ω	5Ω	5Ω	NC	1. 5Meg	NC	† 280Ω
V 13	6SN7GTB	600KΩ	† 90KΩ	300KΩ	330KΩ	† 30KΩ	0Ω	3Ω	2Ω	
V 14	12CU6	TP	16Ω	NC	† 11KΩ	1Meg	NC	18Ω	0Ω	TOP CAP ▲ 10Ω
V 15	12AX4GTA	NC	NC	150KΩ	NC	† 60Ω	NC	18Ω	20Ω	
V 16	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲ 335Ω
V 17	21ALP4A/B	0Ω	100KΩ	PIN 6 † 60Ω	PIN 10 ▲ 180KΩ	PIN 11 ■ 270KΩ	PIN 12 2Ω			

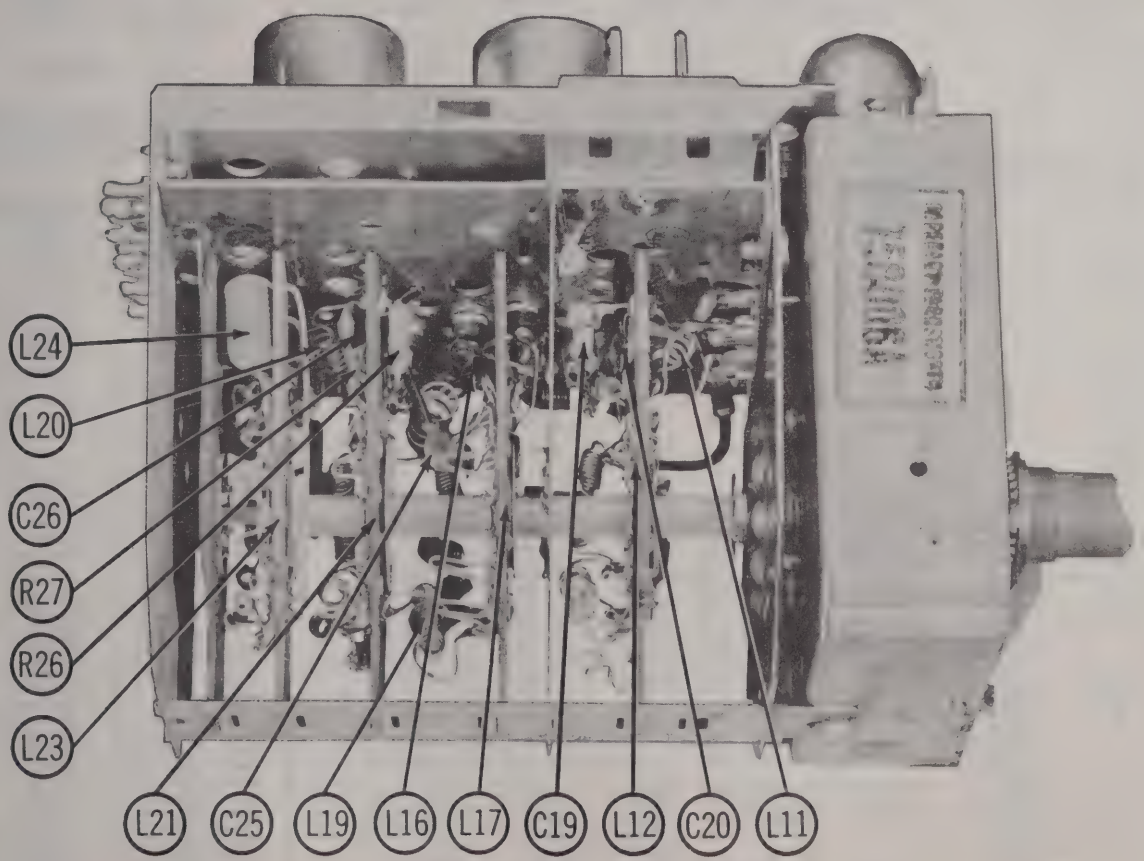
* MEASURED IN "UHF" POSITION.
■ MEASURED FROM 135V LINE.
† MEASURED FROM OUTPUT OF M2.
▲ MEASURED FROM PIN 3 OF V15.
TP-TIE POINT.
NC-NO CONNECTION.



TUBE PLACEMENT CHART



UHF-VHF TUNER-RIGHT SIDE



UHF-VHF TUNER-LEFT SIDE

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	REPLACEMENT DATA: CAPEHART Part No.	REPLACEMENT DATA: STANDARD REPLACEMENT	NOTES
V1	UHF Oscillator	2AF4	2AF4	ST4 may be used in some versions
V2	VHF RF Amplifier	5SK7A	5SK7A	
V3	VHF Mixer-Oscillator	5U8	5U8	
V4	1st. Video IF Amplifier	5CB8	5CB8	
V5	2nd. Video IF Amplifier	5CB6	5CB6	
V6	3rd. Video IF Amplifier-Video Detector	5AM8	5AM8	
V7	Video Output- Sync Separator	6AU8	6AU8	
V8	Sound IF Amplifier	3AU6	3AU6	
V9	Audio Detector	3BN6	3BN6	
V10	Audio Output	1SL6GT	1SL6GT	
V11	Sync Amplifier-Vert. Osc.	6SN7GTB	6SN7GTB	
V12	Vert. Output	12B4A	12B4A	
V13	Horiz. AFC-Horiz. Osc.	6SN7GTB	6SN7GTB	
V14	Horiz. Output	12CU8	12CU8	
V15	Damper	12AX6GTA	12AX6GTA	
V16	HV Rectifier	1B3GT	1B3GT	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: CAPEHART Part No.	CBS Part No.	GENERAL ELECTRIC Part No.	SYLVANIA Part No.	NOTES
V17	21AL P4A/B ‡	21AL P4A/B ①	21AL P4A/B ①	21AL P4A/ ①	① Aluminized
		21AL P4B ①	21AL P4B ①	B ②	② Silver screen "B"
		21AL P4	21AL P4		
	21ATP4 ①	21ATP4 ①	21ATP4 ①	21ATP4 ①	
	24DP4A ①	24DP4A ①	24DP4A ①	24DP4A ①	
			24DP4	24DP4	

‡ Items C68A, C68B, C68C, R62A, R62B and R62C are combined in one unit.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: CAPEHART Part No.	AEROVOX Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No.	PYRAMID Part No.	SANGAMO Part No.	SPRAGUE Part No.
C1	200	200	8503355B-3	RE1039	E210498	WS342	TD-200-300	D-190	RE646 *
C2A	140	300	8503355B-5	RE1040	E210490	W6437	TD-150-150	S-200	RE834 *
B	100	50			ERH50L	TC3501	TD-100-50	MTH-5010	
C3A	140	300	8503355B-7	RE1041	E210491	W7449	CDB-1008	Q-152	RE835 *
B	200	150			ERH35	TC63	TD-12-350	T-180	
C	6	300							
D	10	300							
C4	20	300	8503355B-8	FRS350V20	BR2035	TC65	TD-20-350	FM-4520	TVA-3608

* Unit must be ordered from manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: CAPEHART Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C5	470	2000	450954A-8	HVD-30-470	DD30-471	V27A7	3KV-471	DC30347	20GA-T47	
C6	470	2000	450954A-6	HVD-30-470	DD30-471	V27A7	3KV-471	DC30347	20GA-T47	
C7	1-4									
C8	170									
C9	170									
C10	1000		EF-001	MFT-1000					503C-D1	
C11	.01									
C12	3.3									
C13	15		BPD-000015		GO21	S31-150	UC-5415		5GA-Q15	
C14	1000		EF-001	MFT-1000					503C-D1	
C15	1000		EF-001	MFT-1000					503C-D1	
C16	470	2000	450954A-8	HVD-30-470	DD30-471	V27A7	3KV-471	DC30347	20GA-T47	
C17	470	3000	450956A-6	HVD-30-470	DD30-471	V27A7	3KV-471	DC30347	20GA-T47	
C18	1000		BPD-001	DD-103	K069	S01-001	DC-531		5HK-D1	
C19	10		NPO-010	TCZ-10	TZ09	NPOA-100	ZT-541		5TCC-Q2	
C20	18		D2000018	DC-180	GO22	S31-180	UC-5418		5GA-Q18	
C21	1000									
C22	3.7									
C23	1000									
C24	1000									
C25	1000									
C26	1000									
C27	1000									
C28	1000		600881B-4	BPD-001	DD-103	K069	S01-001	DC-531	5HK-D1	
C29	1000		600881B-4	BPD-001	DD-103	K069	S01-001	DC-531	5HK-D1	
C30	1000		600881B-4	BPD-001	DD-103	K069	S01-001	DC-531	5HK-D1	
C31	470		600881B-2	BPD-00047	DD-471	K060	S11-471	UC-5347	5GA-T47	
C32	1000		600881B-4	BPD-001	DD-103	K069	S01-001	DC-531	5HK-D1	
C33	1000									
C34	1000									
C35	1000									
C36	1000									
C37	1000									
C38	1000		600881B-4	BPD-001	DD-103	K069	S01-001	DC-531	5HK-D1	
C39	1000		600881B-4	BPD-001	DD-103	K069	S01-001	DC-531	5HK-D1	
C40	1000		600881B-4	BPD-001	DD-103	K069	S01-001	DC-531	5HK-D1	
C41	470		600881B-2	BPD-00047	DD-471	K060	S11-471	UC-5347	5GA-T47	
C42	1000		600881B-4	BPD-001	DD-103	K069	S01-001	DC-531	5HK-D1	
C43	.25	25	650156A-1		CUB2P25			PT401	2TM-P25	
C44	1000		450469A-7	BPD-01	DD-103	K069	S01-001	DC-531	5HK-D1	
C45	470		450468A-11	BPD-00047	DD-471	K060	S11-471	UC-5347	5GA-T47	
C46	470		450468A-11	BPD-00047	DD-471	K060	S11-471	UC-5347	5GA-T47	
C47	470		450469A-11	BPD-00047	DD-471	K060	S11-471	UC-5347	5GA-T47	
C48	5		650156A-2	TCZ-4R7	DD5-050		ZT-588	TCCD-B-T47	5TCCD-B-T47	
C49	.1	150	650156A-3	P388N-1		DF-104	CUB2P1	PT401	2TM-P1	
C50	1000		600881B-4	BPD-001	DD-103	K069	S01-001	DC-531	5HK-D1	
C51	8300		450469A-24							
C52	330		450469A-25	BPD-00033	DD-331	G051	S11-331	UC-5333	5GA-T33	
C53	33		651253A-3							
C54	.1	400	2247-1040	P488N-1		DF-104	CUB4P1	PT401	4TM-P1	
C55	3.9		650039A-5	NPO-3R9	TCZ-3R3	TZ06	NPOA-3R3	ZT-5533	5TCCB-V33	
C56	68		651238A-4							
C57	33		651238A-3	NPO-033	DD-330	GO29	S31-330	ZT-5433	5TCC-Q5	
C58	10000		600881B-8	BPD-01	DD-103	K083	S11-01	DC-511	5HK-E1	
C59	10000		600881B-8	BPD-01	DD-103	K083	S11-01	DC-511	5HK-E1	
C60	1000		450469A-7	BPD-001	DD-103	K069	S01-001	DC-531	5HK-D1	
C61	10		650039A-18		TCA-10		N330A-100			
C62	10000		600881B-8	BPD-01	DD-103	K083	S11-01	DC-511	5HK-E1	
C63	10000		600881B-8	BPD-01	DD-103	K083	S11-01	DC-511	5HK-E1	
C64	10000		600881B-8	BPD-01	DD-103	K083	S11-01	DC-511	5HK-E1	
C65	.033	400	2247-2250	BPD-02	DF-303	CUB4S2	S17-02	PT4122	4TM-S22	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: CAPEHART Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C66A	270			#1270		CD54	81-271	UC-5327	5GA-T27	
B	10000		‡453991C-1	BPD-01	‡PC-360	K062	81-01	DC-511	5HK-S1	
C	25			BPD-0000025		G026	831-250	UC-5425	5HK-Q25	
C67	.047	400	2247-4730	BPD-05	DF-503	CUB4S7		PT4047	4TM-S47	
C68A	4700		‡453990A-1	♦PA-383	♦PC-106	K079	81-0047	DC-525	5HK-D47	
B	4700					K079	81-0047	DC-525	5HK-D47	
C69	1000		450468A-21	DI003	DD-302	K076	811-003	UC-523	5GA-D3	Note 1
C70	5000		450468A-12	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C71	.001	600	2246-1030	BPD-001	DS-102	CUB4D1	GP5L-102	PT501	5TM-P1	
C72	.1	600	2246-1049			CUB4P1		PT601	6TM-P1	
C73	.023	600	2248-3230	BPD-03	DF-303	CUB4S23		PT4133	6TM-S33	
C74	.023	300	2246-2230	BPD-03	DF-303	CUB4S23	S17-02	PT4123	4TM-S22	
C75	30		651253A-2	DI00002	DD-300	CG03	831-300	UC-542	5GA-Q2	
C76	47		651253A-5	BPD-000047	DD-470	CG03	831-470	UC-5447	5GA-Q47	
C77	.047	400	2247-4730	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C78	.023	300	2246-2230	BPD-03	DF-303	CUB4S23	S17-02	PT4122	2TM-S22	
C79	.47	50	650156A-5	P268N-47		CUB2P47		PT4047	2TM-P47	
C80	33		651253A-3							
C81	33		651253A-3							
C82	180	500	2272-3181	NPO-D180	TCZ-150	22R5115	NP0-334-151	MC3236	M3-315	
C83	.01	300	2246-1030	BPD-01	DS-102	D6-103	CUB4S1	GP3-333-103	PT6U	4TM-S1
C84	820	500	651333A-3	1464-00682			IR1T93		MB-382	5GA-T47
C85	470		600881B-3	BPD-00047	DD-470	K060	811-471	UC-5347	5GA-T47	
C86	.047	400	2247-1040	BPD-05	DF-503	CUB4S47		PT6147	6TM-S47	Note 2
C87	.01	600	2246-1030	BPD-01	DS-103	CUB6S1	GP3-333-103	PT6U	6TM-S1	
C88	.068	400	2247-6830	P488N-068		CUB4S68		PT4168		
C89	56	3000	450954A-8				3KV-560	DC30456		
C90	1000			BPD-001	DD-103	K069	S01-001	DC-521	5HK-D1	
C91	1000		600881B-4	BPD-001	DD-103	K069	S01-001	DC-521	5HK-D1	
C92	1000		600881B-4	BPD-001	DD-103	K069	S01-001	DC-521	5HK-D1	

‡ Items C68A, C68B, C68C, R62A, R62B and R62C are combined in one unit.
♦ Items C68A, C68B, R68A and R69B are combined in one unit.
Note 1. Some versions may use a 2000MMF unit in this application.
Note 2. Some versions may use a .1MFD unit (part #2247-1041) in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CAPEHART Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	IRC Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	330KΩ	½	850341A-28	B-51-8	A47-350K-Z	Q13-133	TA334A	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A.
C	Switch		Not Req.		SWR-12	78-1	US-26	Attach to R1A.
R2A	170KΩ with 70KΩ stop	½	850341A-4	♦ AB-43	♦ A47-100K-4	♦ Q11-138	♦ TA15L	Horiz. Hold
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R2A.
R3A	800KΩ	½	850341A-30	AB-69	A47-1Meg-8	Q11-134	U-54	Vert. Hold
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R3A.
R4A	250KΩ	½	850341A-26	B-48	A47-300K-8	Q11-129	U-43	Brightness
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R4A.
R5A	150KΩ	½	850341A-2	AB-515		Q17-109	U-5	Contrast
B	Shaft		Not Req.	AK-3		Not Req.	Not Req.	Attach to R5A.
R6A	1.5Meg	½	850341A-29	AB-742	A47-1.5Meg-8	Q11-138	TA15L	Height
B	Shaft		Not Req.	AK-1	FXS-1	NQ	Not Req.	Attach to R6A.
R7	1800Ω with 350Ω stop	2	650643A-7		♦ 39-1500			Vert. Linearity Wire-Wound
R8	650Ω with 150Ω stop	2	650642A-13		39-700-300			Noise Rejection-Wire-Wound

♦ Connect a 68KΩ resistor in series with the left hand terminal of the control and the lead connecting to the same terminal of the original control (control viewed from shaft end, terminals down).
† Connect a 330Ω resistor in series with the terminal of the control and the lead connecting to the same terminal.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CAPEHART Part No.	IRC Part No.	NOTES
R9	470KΩ	½	3223-474	BTS-470K	
R10	470KΩ	½	3223-474	BTS-470K	
R11	680Ω	½		BTS-680Ω	
R12	100Ω	½		BTS-100Ω	
R13	150Ω	½		BTS-150	
R14	470KΩ	½	3223-474	BTS-470K	
R15	470KΩ	½	3223-474	BTS-470K	
R16	270Ω	½		BTS-270Ω	
R17	330KΩ	½		BTS-330K	
R18	560Ω	½		BTS-560Ω	
R19	1Meg	½		BTS-1Meg	
R20	330KΩ	½		BTS-330K 5%	
R21	15KΩ	½		BTS-15K	
R22	150KΩ	½		BTS-150K	
R23	13KΩ	½		BTS-13K	
R24	12KΩ	½		BTS-12K	
R25	33KΩ	½		BTS-33K	
R26	470KΩ	½		BTS-470K	
R27	560Ω	½		BTS-560Ω	
R28	150KΩ	½		BTS-150K	
R29	470Ω	½		BTS-470	
R30	330KΩ	3	3236-333	BTB-330K	
R31	100Ω	½	3223-101	BTS-100Ω	
R32	330KΩ	½	3223-334		
R33	100KΩ	½	3223-104	BTS-100K	
R34	22KΩ	½	3223-223	BTS-22K	
R35	100Ω	½	3223-101	BTCC-100	
R36	47Ω	½	3223-470	BTS-47	
R37	100Ω	½	3223-101	BTS-100Ω	
R38	33KΩ	½	3223-333	BTS-33K	
R39	100Ω	½	3223-101	BTS-100	
R40	47Ω	½	3223-470	BTS-47	
R41	100Ω	½	3223-101	BTS-100	
R42	100Ω	½	3223-101	BTS-100	
R43	100Ω	½	3223-101	BTS-100	
R44	1Meg	½	3223-105	BTS-1Meg	
R45	1Meg	½	3223-105	BTS-1Meg	
R46	3700Ω	3	4534775A-3	BTB-3700	
R47	33KΩ	½	3223-333	BTA-33K	
R48	3700Ω	3	4534775A-3	BTB-3700	
R49	47Ω	½	3223-470	BTS-47	
R50	220KΩ	½	3223-224	BTS-220K	
R51	100KΩ	½	3223-104	BTS-100K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CAPEHART Part No.	IRC Part No.	NOTES
R52	180KΩ	½	3223-184	BTS-180K	
R53	330KΩ	½	3223-334	BTS-330K	
R54	18KΩ	½	3223-183	BTS-18K	
R55	150Ω	½	3223-151	BTS-150	
R56	47Ω	½	3223-470	BTS-470	
R57	560Ω	½	3223-563	BTS-5600	
R58	510KΩ 5%	½	3223-514	BTS-510K 5%	
R59	470KΩ 5%	½	3223-474	BTS-470K 5%	
R60	620Ω	½	3223-622	BTS-6200	
R61	27Ω	3	3235-271	BTB-270	
R62A	10K Ω			BTS-10K	
B	330KΩ		‡453931C-1	BTS-330K	
C	2.2Meg			BTS-2.2Meg	
R63	560KΩ	½	3223-564	BTS-560K	
R64	180KΩ	½	3223-184	BTS-180K	
R65	22KΩ	½	3223-223	BTS-22K	
R66	270KΩ	½	3223-273	BTS-270K	
R67	680KΩ	½	3223-683	BTS-6800	
R68	10KΩ	½	3223-103	BTS-10K	
R68A	22KΩ	½	♦453930A-1	BTS-22K	
B	10KΩ			BTS-10K	
R70	680KΩ	½	3223-684	BTS-680K	
R71	470KΩ	½	3223-474	BTS-470K	
R72	47KΩ	½	3223-473	BTS-47K	
R73	5600Ω 5%	½	3223-562	BTS-5600 5%	
R74	390KΩ	½	3223-394	BTS-390K	
R75	1.5Meg	½	3223-155	BTS-1.5Meg	
R76	100KΩ	½	3223-104	BTS-100K	
R77	56Ω	½			
R78	560Ω	½			
R79	470KΩ	½	3223-474	BTS-470K	
R80	100KΩ	½	3223-104	BTS-100K	
R81	180KΩ	½	3223-184	BTS-180K	
R82	150KΩ	½	3232-154	BTA-150K	
R83	3300Ω	½	3223-332	BTS-3300	
R84	100KΩ	½	3223-104	BTS-100K	
R85	27KΩ	½	3223-273	BTS-27K	
R86	220KΩ	½	3223-224	BTS-220K	
R87	470KΩ	½	3223-474	BTS-470K	
R88	1.5Meg	½	3223-155	BTS-1.5Meg	
R89	18KΩ	½	3223-183	BTS-18K	
R90	150KΩ	½	3232-154	BTA-150K	
R91	100Ω	½	3223-101		

RESISTORS (cont)

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CAPEHART Part No.	IRC Part No.	NOTES
R92	1Meg	½	3229-105	BTS-1Meg	
R93	27000Ω	2		BTB-2700	Note 1, 2
R94	8200Ω	3		BTB-8200	Note 2
R95	22KΩ	½	3229-223	BTS-22K	
R98	1 MΩ	½	8500102A-44	BW1-1.0	

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CAPEHART Part No.	IRC Part No.	NOTES
R97	40Ω	20	650100A-59		
R98	5000 Ω± 20% Cold				Note 3
R99	1 kΩ	5	4532948-1		
R100	470KΩ	1	3229-474	BTS-470K	

Note 1. Some versions use a 3300Ω 2W resistor in this application.
Note 2. In chassis coded R-1, R93 & R94 are replaced by a single 6000Ω 7W resistor.
Note 3. Special "thermistor" type; used in UHF models only.
† Items R62A, R62B, R62C, C66A, C66B, C66C are combined in one unit.
♦ Items R69A, R69B, C65A, C66B are combined in one unit.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: CAPEHART Part No.	Halldorson Part No.	Merit Part No.	RCA TYPE No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
T1	Vert. Osc. Trans.	750615C-1	B6702	A-3003	20V71 ②	V405	A-8125	26A03	A-97X
T2	Horiz. Output Trans.	850392A 1	FB420 * ②	HVO-54 * ②	23ST1 * ②	X129 * ②	A-8255 * ②	FLY-76 * ②	D-49 * ②
T3	Vert. Output Trans.	750615B-1	Z1900 ①	A-2823 ①	V307	A-8144	26U72	A-108X	
T4A	Yoke(90°)Horiz.(110°)	850394-A	DF607 ④	MDF-92 ④	25SD1 ④	Y90F1/4S ④	DY-16A ④	Y-16 ④	Y-61-I ④
B	Vert.(37MH)		⑤	⑤		⑤	⑤	⑤	⑤

① 750615B-1 alternate Capehart Part Number.
② Drill new mounting hole(s).
③ Use 8 to 1 turns ratio.
④ Use original rear cover and centering device.
⑤ Use original horizontal damping network.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL ITT/ARVIN CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4	5	5	9	5	5	5	5
8	4	4	5	4	4	4	6
7	4	4	5	4	4	4	7
6	NC-See Note ⑤	NC-See Note ⑤	NC-See Note ⑤	NC-See Note ⑤	NC-See Note ⑤	NC-See Note ⑤	NC-See Note ⑤
5	1	2	3	2	2	2	1
3	1	1	1	1	1	1	2
Special Retn	2	2					

② Install horizontal damping network of approximately 120MMF 4KV and 1KΩ in series across yoke terminals 3 and 7 (adjust values if necessary).
⑤ If necessary to increase width, adjust size of capacitor C89.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI	IMPEDANCE: SEC	REPLACEMENT DATA: CAPEHART Part No.	Halldorson Part No.	Merit Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	NOTES
T5	2.75K	3-4Ω	851309A-1	Z1101	A3025	A3532	26S58 ①	S-12X	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: CAPEHART Part No.	QUAM Part No.	RCA TYPE No.	NOTES
SP1	4"	PM	3-4Ω	750868A-1	4A07	22S1	Used in Models 8T-316, 17C-316.
	8"	PM	3-4Ω	750717A-1	8A2i	20S2	Used in Model 8T-346.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI	DC RES. SEC	REPLACEMENT DATA: CAPEHART Part No.	MEISSNER Part No.	MERIT Part No.	MILLER Part No.	NOTES
L1	UHF Ant. Coil	0Ω						
L2	UHF Ant. Coil	0Ω						
L3	Fil. Choke	0Ω						
L4	Fil. Choke	0Ω						
L5	CathOde Choke	0Ω						
L6	RF Choke	0Ω						
L7	RF Choke	0Ω						
L8	UHF Osc. Coupling Coil	0Ω						
L9	UHF IF Coil	0Ω						
L10	VHF Ant. Matching Coil	0Ω	0Ω					Channel 13
L11	VHF Ant. Coil	0Ω						
L12	VHF Ant.Coils	0Ω						
L13	UHF IF Coil	0Ω						
L14	Fil. Choke	0Ω						
L15	Neut. Coil	0Ω						
L16	VHF RF Coil	0Ω						Channel 13
L17	VHF RF Coils	0Ω						
L18	UHF IF Trans.	0Ω						
L19	VHF RF Trans.	0Ω	0Ω					Channel 6
L20	VHF Osc. Grid Coil	0Ω						Channel 13
L21	VHF Mixer Grid Coils	0Ω						Channel 13
L22	VHF Osc.Coil	0Ω						
L23	VHF Osc.Coil	0Ω						Channel 6
L24	VHF Coil	0Ω						
L25	1st Video IF	.1Ω	.1Ω	750723B-1	17-4504			Includes 47.25MC Trap
L26	2nd Video IF	.1Ω	.1Ω	750856A-1	17-5002 *	T4-127 *	6233 *	Includes 4L 23MC Trap
L27	3rd Video IF	.1Ω	.1Ω	750721B-1	17-5003 *	T4-128 *	6233 *	Includes 47.25MC Trap
L28	4th Video IF	.3Ω	.3Ω	750858B-1				Includes 47KΩ and 4.7KΩ resistor
L32	Series Peaking Coil	11.5Ω		750597A-1	18-3169 ⑥	TV-184 ⑥	6180 ⑥	180 Microhenries, Wound on 10KΩ 1W resistor
L33A	4.5MC Trap	2.6Ω						
B	1st Sound IF	.6Ω		651000B-1				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CAPEHART PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L34	Shunt Peaking Coil	6.5Ω		650585A-2	19-3250	TV-185	6181	250 Microhenries
L35	Series Peaking Coil	7.3Ω		750597A-7	19-4200		6154 ▲	220 Microhenries, Wound on 10KΩ resistor
L36	2nd Sound IF	1.7Ω	3.1Ω	651213A-1				
L37	Quadrature Coil	5.5Ω		650776A-1	20-1005		1480	

* Use adaptor plate.
■ Parallel with 10KΩ 1W resistor.
▲ Parallel with 10KΩ resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	CAPEHART PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L38	23Ω	60Ω	650975C-1	20-1402 *	TV-162 *	6183 *	205R1 *	H-100 *	HS-3 *	Waveform winding= 46Ω

* Reverse coil mounting in can.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	CAPEHART PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L39	.230A	59Ω	1.46HY	650215A-8	C5040	C2974 ①	C2327	26C41	C-23X ①

① Drill one new mounting hole.

SELENIUM RECTIFIER

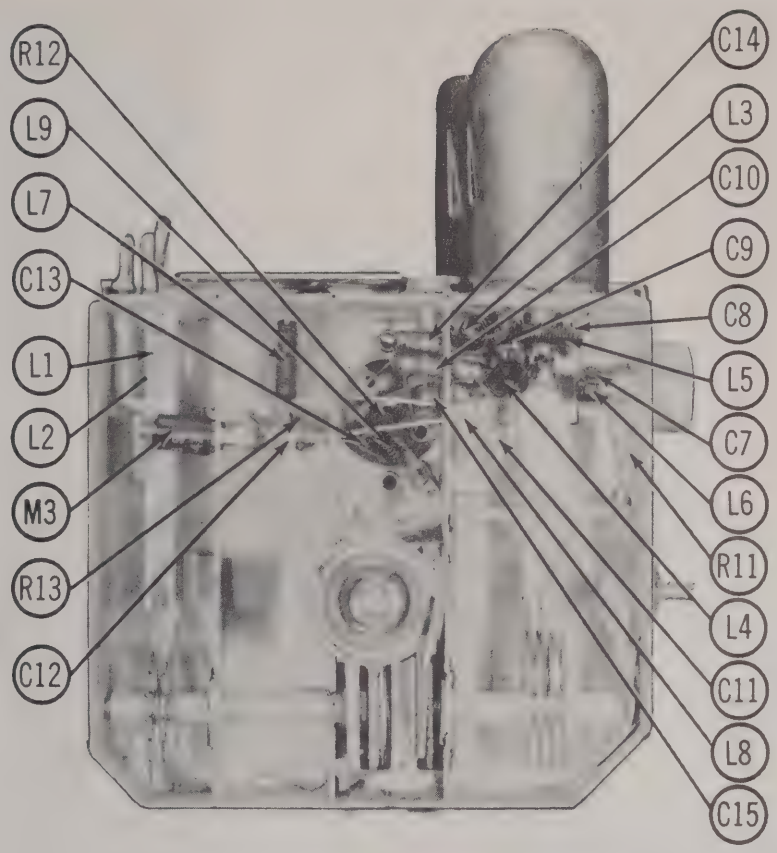
ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	CAPEHART PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.230A	650150D-7	1090A	MR300	6S300	6Q4	300	
M2	.230A	650150D-7	1090A	MR300	6S300	6Q4	300	

CRYSTAL DIODES

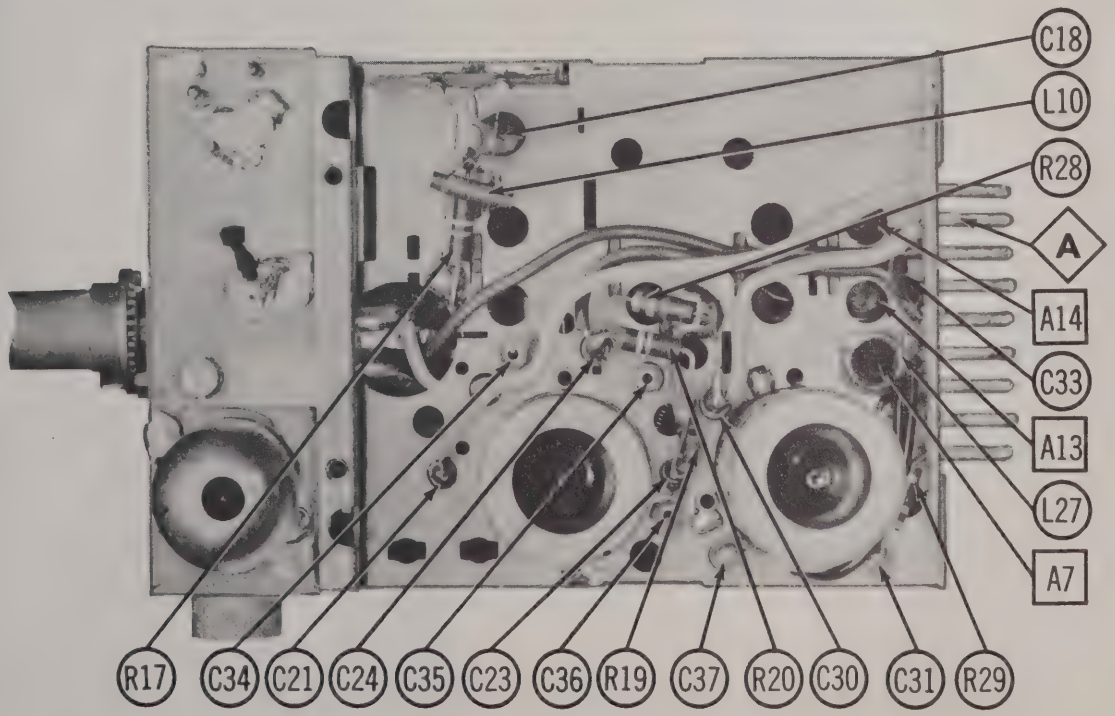
ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		CAPEHART PART No.	SYLVANIA PART No.	
M3	ST-47		1N82 or 1N82A	UHF Mixer (Clip in)

MISCELLANEOUS

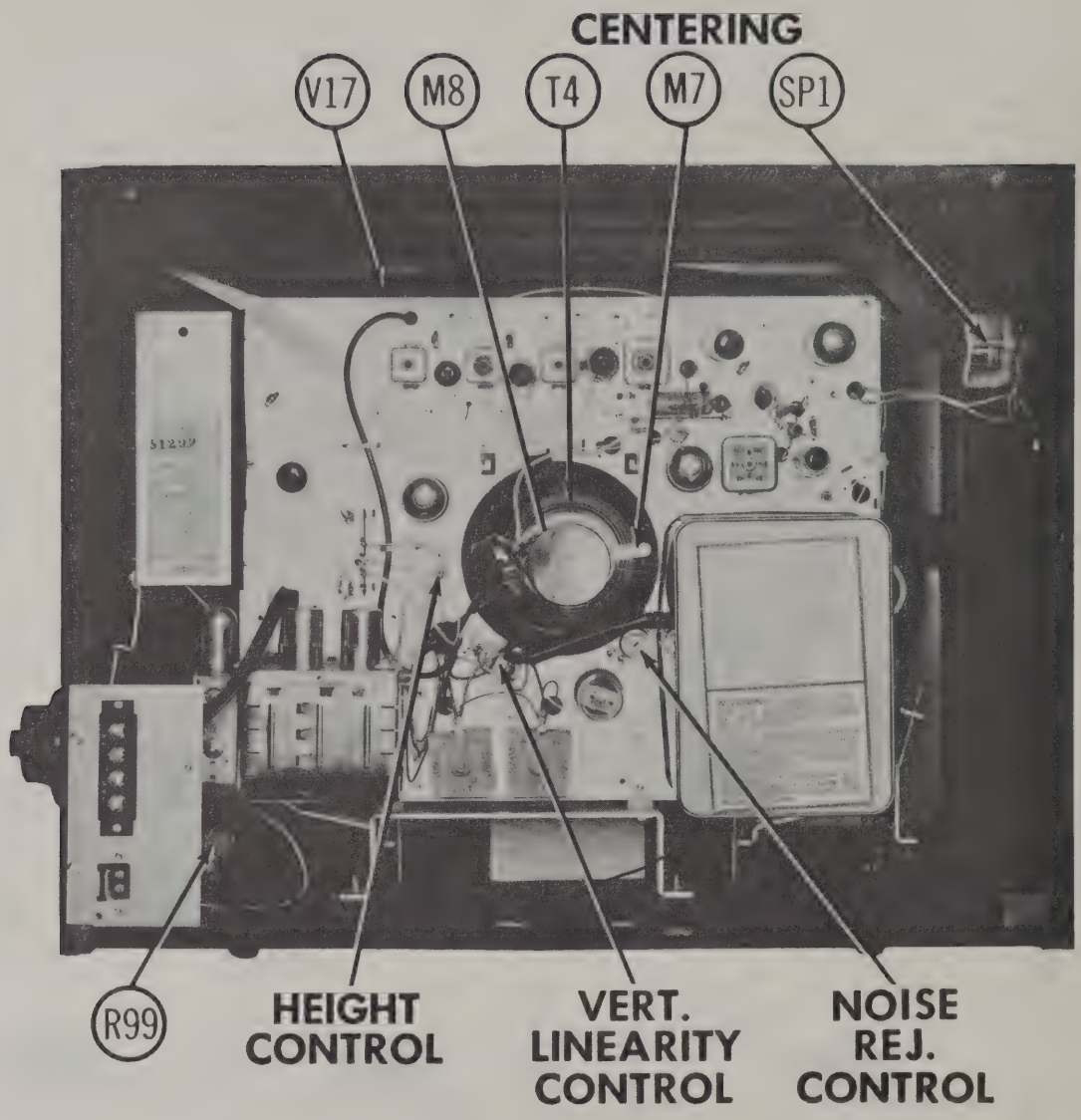
ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M4	Dial Light		#47 Used In UHF Models Only.
M5	Tuner	750807A-G1	VHF-UHF Combination; Used In Model Numbers With Suffix -5; VHF-UHF Tuner Consists Of VHF Tuner Part #850393B-1 & UHF Tuner Part #750806B-1.
M6	Tuner	850393B-1	VHF - Used In Model Numbers With Suffix -4.
M7	Centering Device		Part Of Deflection Yoke (T4) Rear Cover.
M8	Ion Trap	750724A-6	
	Knob	750810A-1	VHF Channel Selector - VHF Models Only.
	Knob	750811A-1	VHF Channel Selector - VHF-UHF Models.
	Knob	651200B-1	VHF Fine Tuning.
	Knob	651028A-4	Secondary Controls (5 Used).
	Knob	651203A-1	UHF Tuning - VHF-UHF Models.
	Dial	651204A-1	UHF - VHF-UHF Models.
	Safety Glass	850246A-4	Model 9T246 Series.
	Safety Glass	850223A-15	Models 8T216 & 17C216 Series.
	Mask	651247A-1	Model 9T246 Series.
	Mask	651224A-1	Models 8T216 & 17C216 Series.



UHF TUNER FRONT VIEW



VHF-UHF TUNER TOP VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Connect a short across terminals "C" and "D" of the horizontal oscillator coil (L38).

Set the horizontal hold control to the full clockwise position.

Adjust the horizontal frequency slug (B1) until the picture falls into sync.

Remove the short from L38 and connect the vertical amplifier of an oscilloscope to terminal "C" of L38 through a 5MMF capacitor. Adjust the horizontal phasing slug (B2) for a waveshape on scope as in Fig. 5 with broad and narrow peaks of equal height. If necessary, during alignment keep the picture in sync with B1 or the horizontal hold control.

Remove the scope from terminal "C".

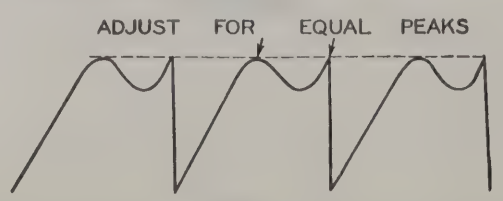


FIG. 5

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

FADA MODELS PC17, -EB, -LO, PC21, -EB, -K, -KD, -KLO,-LO, UPC17, -EB, -LO, UPC21, -EB, -K, -KD, KLO, -LO

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FADA MODEL UPC21

TRADE NAME	Fada	MODELS PC17, PC17EB, PC17LO, PC21, PC21EB, PC21K, PC21KD, PC21KLO, PC21LO, UPC17, UPC17EB, UPC17LO, UPC21, UPC21EB, UPC21K, UPC21KD, UPC21KLO, UPC21LO
MANUFACTURER	Fada Radio & Electric Co., Inc., 525 Main St., Belleville, N.J.	
TYPE SET	Television Receiver	
TUBES	Eighteen	
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING 1.48 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

INDEX

Alignment Instructions 6,7
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 18
Parts List and Descriptions 12, 13, 14
Photographs
Cabinet-Rear View 18
Capacitor & Alignment Identification 3, 10
Chassis-Top View 16
RF Tuner 15, 17
Photographs (Cont)
Resistor & Inductor Identification 4, 9
Resistance Measurements 8
Servicing in the Field 1
Schematic (Alternate Tuner) 11
Schematic (TV) 2
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

FADA MODELS PC17, -EB, -LO, PC21, -EB, -K, -KD, -KLO, -LO, UPC17, -EB, -LO, UPC21, -EB, -K, -KD, KLO, -LO

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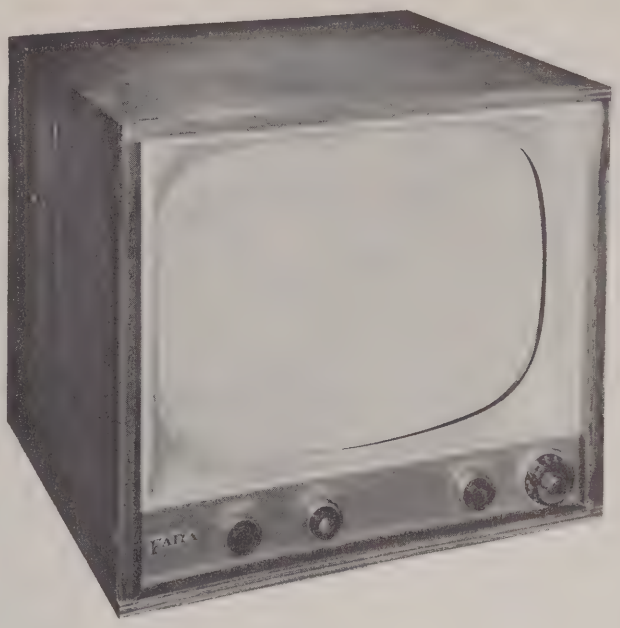

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 9 push-on type control knobs from front panel of cabinet.
2. Remove 7 wood screws. Remove rear cover.
3. Disconnect speaker leads, HV lead and ground strap.
4. Remove picture tube socket, ion trap and centering magnet.
5. Remove 4 chassis bolts. Remove chassis.
6. Remove 2 wing nuts. Remove speaker.

MODELS

PC17, PC17EB, PC17LO, PC21, PC21EB, PC21K, PC21KD, PC21KLO, PC21LO, UPC17, UPC17EB, UPC17LO, UPC21, UPC21EB, UPC21K, UPC21KD, UPC21KLO, UPC21LO

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FADA MODELS PC17, -EB, -LO, PC21, -EB, -K, -KD, -KLO, -LO, UPC17, -EB, -LO, UPC21, -EB, -K, -KD, KLO, -LO

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of VHF tuner oscillator adjustments, it is necessary to remove the chassis from the cabinet. (See disassembly instructions).

PICTURE TUBE SAFETY GLASS CLEANING

Remove 3 wood screws securing the molding strips to the cabinet sides. Hold the bottom edge of the safety glass and remove molding strips. Let safety glass slide gently down until free of top of cabinet and lift out. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

1. Remove safety glass as directed above.
2. Remove control knobs and insert fingers in the control shaft holes and gently push up and pull out mask.
3. Remove rear cover. Disconnect HV lead, remove picture tube socket, ion trap and centering magnet.
4. Remove 4 cradle mounting nuts and bolts.
5. Gently remove picture tube from cabinet front.

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at its mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A10) located on top of chassis.

FUSES

One fuse is used for horizontal sweep circuit protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

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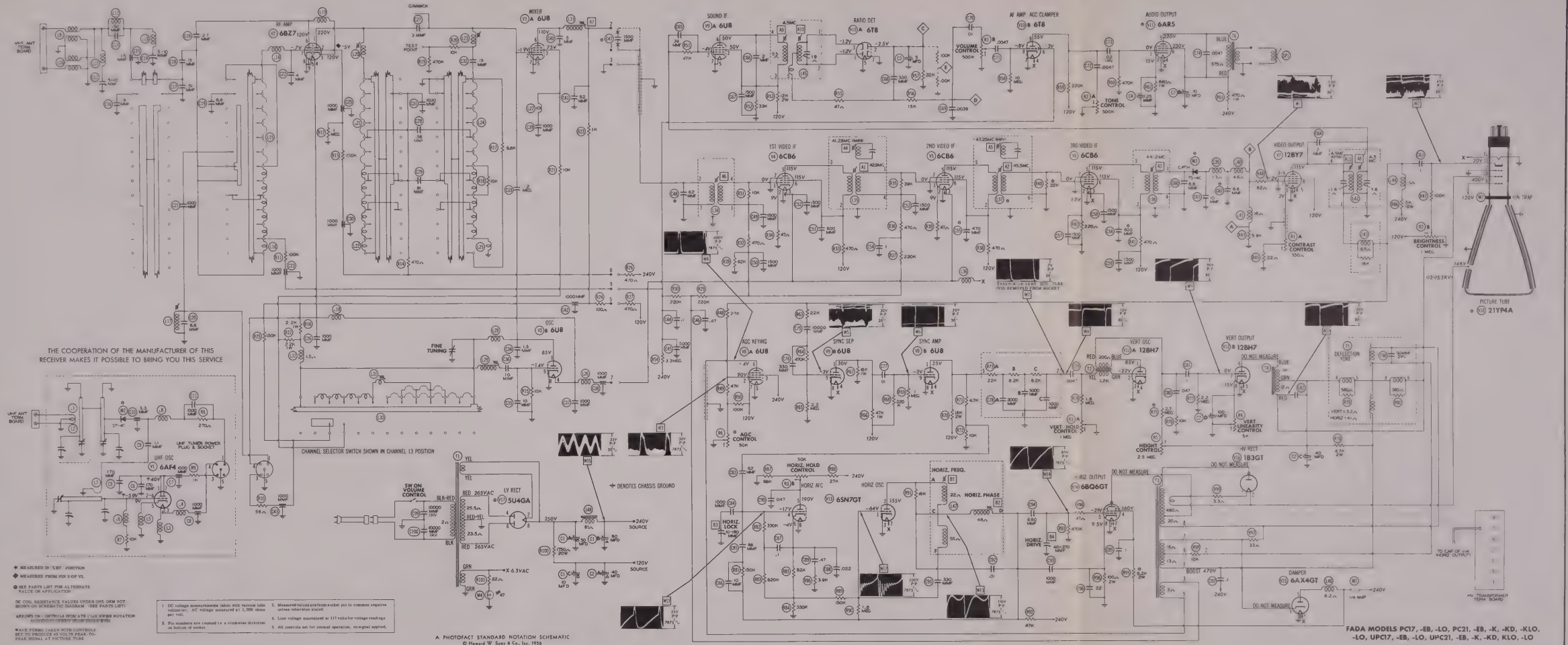
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
DENOTES CHASSIS GROUND
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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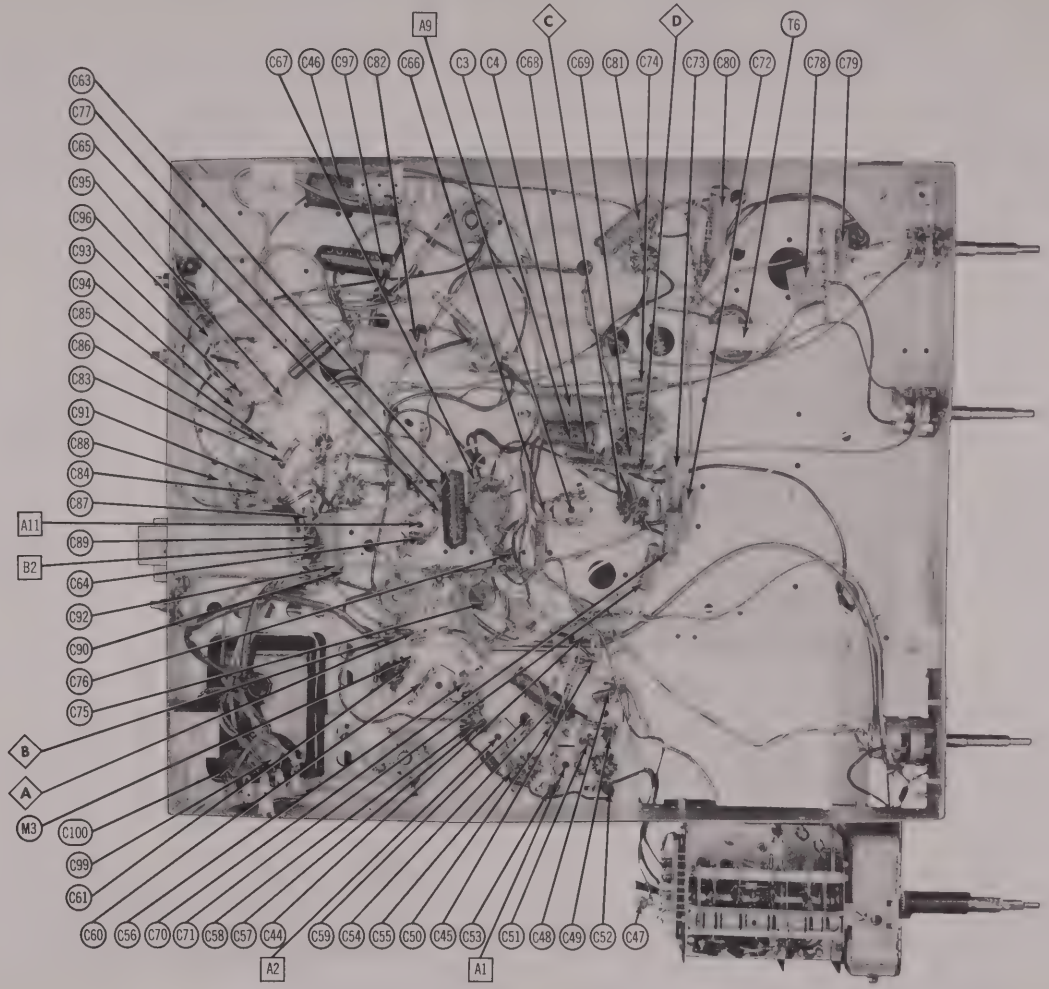
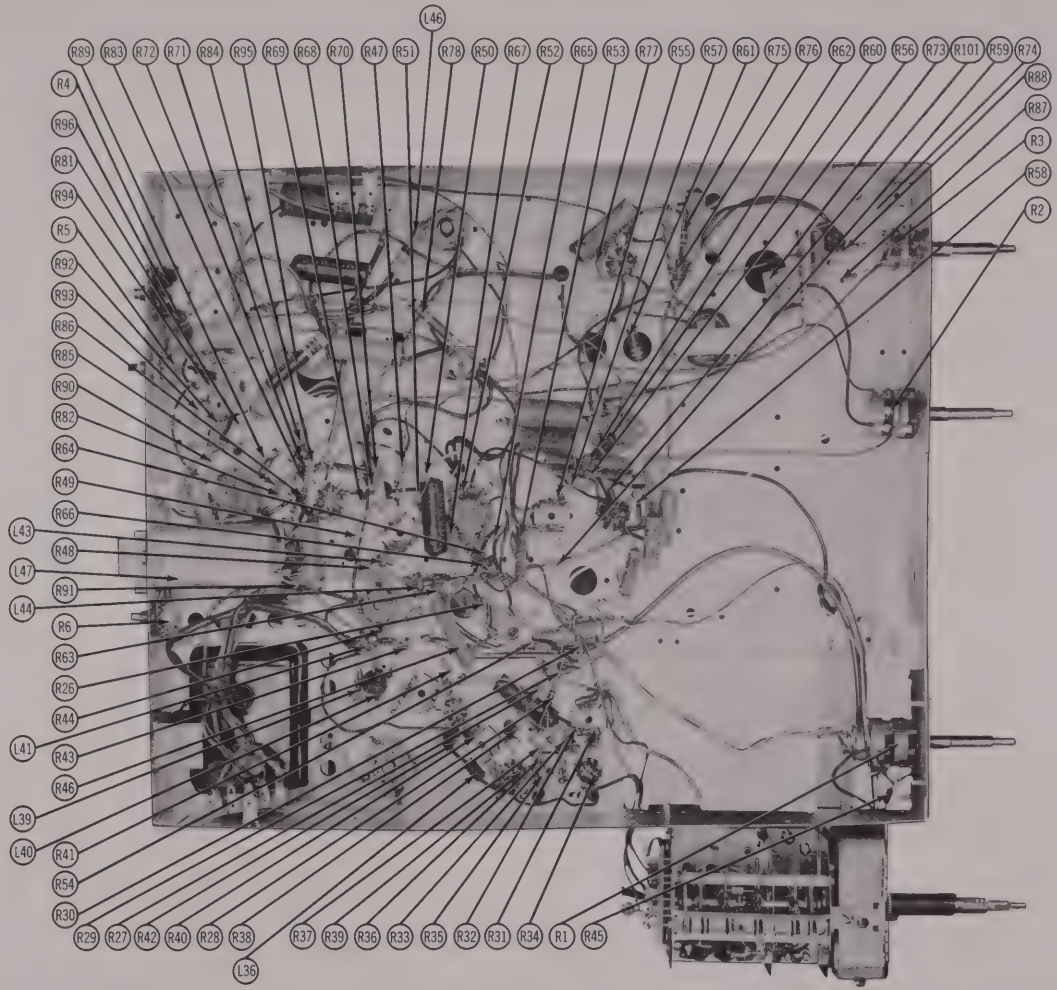
FADA MODELS PC17, -EB, -LO, PC21, -EB, -K, -KD, -KLO, -LO, UPC17, -EB, -LO, UPC21, -EB, -K, -KD, -KLO, -LO

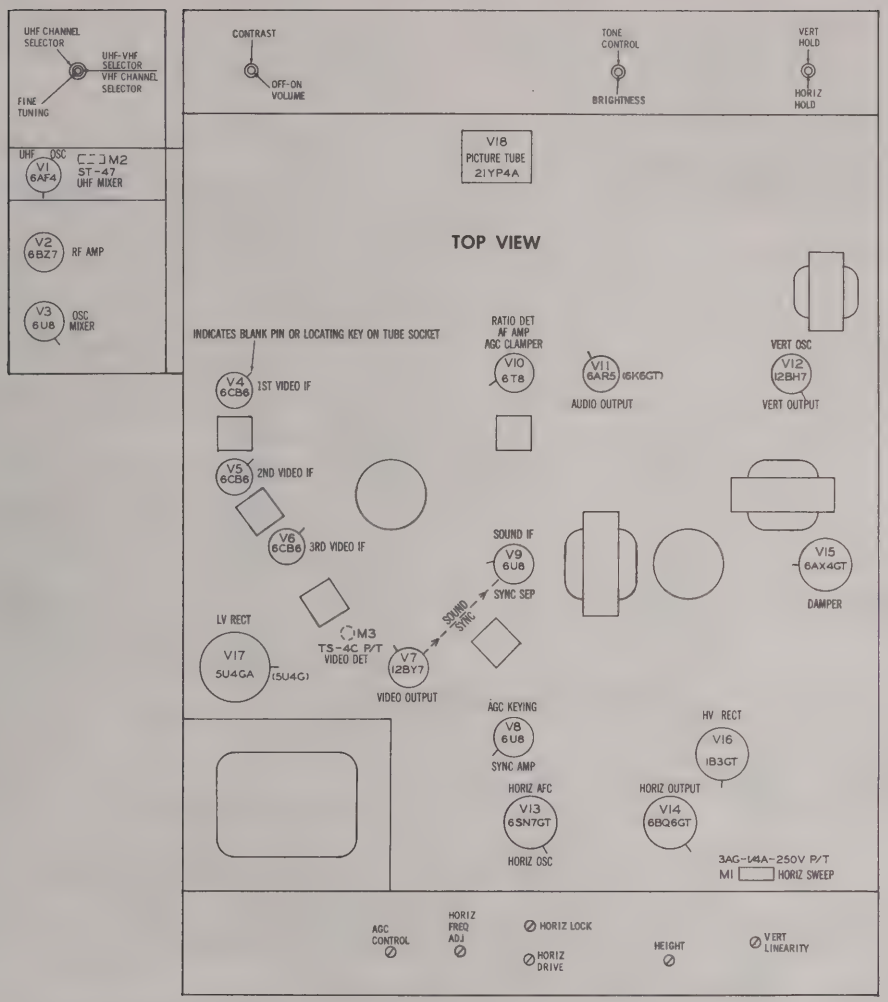


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V17**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, V6, V7 (V1 UHF only)**
No pic, no sound, has snow - **V2, V3, V4**
No pic, has sound, has raster - **V7, V8, V18**
Has pic, no sound - **V9, V10, V11**
Overloaded picture - **V8, V10**

SYNC FAILURE
No vert. sync - **V8, V12**
No horiz. sync - **V8, V13**
No vert. or horiz. sync - **V8, V9**

SWEEP FAILURE
No raster, has sound - **V13, V14, V15, V16, V18, Fuse (M1)**
No vertical deflection - **V12**
Poor vert. linearity or foldover - **V12**
Poor horiz. linearity or foldover - **V13, V14, V15**
Narrow picture - **V13, V14, V15, V16, V17**
Vert. off freq. - **V8, V12**
Horiz. off freq. - **V8, V13**

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from chassis. Do not remove the horizontal oscillator tube (V13) to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V3) from its socket and replace with a 6U8 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications. Set the contrast control for minimum contrast.
Connect the negative lead of a 4.5 volt bias supply to the ungrounded side of C50. Connect the positive lead to chassis
Connect a .001MFD capacitor across the vertical input lead of the oscilloscope. If a separate marker generator is used, connect its high side to the chassis apron near the first video IF stage. Leave the low side disconnected.
In steps 6 and 7, if necessary, reduce bias from 4.5 volts to 3 volts.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 1 (grid) of 6CB6 (V4) Low side to chassis.	Not used	42 9MC (Unmod)	Any	USE VTVM. DC probe thru 47KΩ to point Ⓥ. Common to chassis.	A1	Attenuate generator output to maintain approximately 2.5 volts on VTVM. Adjust for maximum deflection.
2.	"	"	"	45.5MC	"	"	A2	"
3.	"	"	"	44.2MC	"	"	A3	"
4.	"	"	"	41.25MC	"	"	A4	Increase generator output for usable reading on VTVM. Adjust for MINIMUM deflection.
5.	"	"	"	47.25MC	"	"	A5	Adjust for MINIMUM deflection. Repeat steps 1 thru 5 until readings do not change.
6.	"	"	44MC (10MC Swp)	42.5MC 45.75MC	"	Vert. Amp. thru 1MEG to point Ⓥ. Low side to chassis.	A1, A2	Use only enough sweep generator output to produce usable pattern on scope. Retouch A2 to place 45.75MC at 75% on response curve as in Fig. 1. Check position of 42.5MC marker, if necessary SLIGHTLY retouch A1 to place 42.5MC marker. Re-touch A3 to correct tilt. (Fig. 1).
7	Direct	High side to ungrounded tube shield floating over converter tube. Low side to chassis.	"	41.25MC 42.5MC 45.75MC 47.25MC	"	"	A6, A7	Adjust A6 and A7 for maximum response similar to Fig. 2 with correct 42.5MC and 45.75MC marker positions. Increase sweep and marker output to observe trap markers. If necessary, retouch A4 (41.25MC)and A5 (47.25MC) for correct trap marker positions.

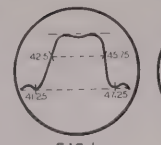


FIG. 1

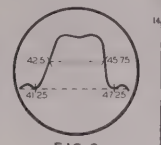


FIG. 2

FIG. 3

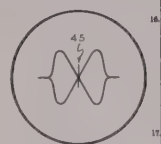


FIG. 4

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ(±1%) resistors in series from point Ⓒ to chassis. The junction of these two resistors is alignment point Ⓧ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001MFD	High side to point Ⓧ Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru 47KΩ to point Ⓥ. Common to chassis.	A8, A9	Adjust for maximum deflection.
9.	"	"	"	"	DC probe thru 47KΩ to point Ⓥ. Common to point Ⓧ.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

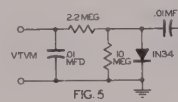


FIG. 5

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to point Ⓧ Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. thru 47KΩ to point Ⓒ Low side to chassis.	A8, A9	Disconnect stabilizing capacitor (C3). Adjust for curve of maximum amplitude and symmetry similar to Fig. 3.
9.	"	"	"	"	"	Vert. Amp. thru 47KΩ to point Ⓥ Low side to chassis.	A10	Reconnect stabilizing capacitor (C3).Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

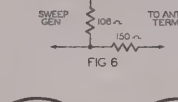


FIG. 6

4.5MC TRAP ALIGNMENT

Set the contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.01MFD	High side to point Ⓘ Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig. 5) to pin 11 (cathode) of picture tube. Common to chassis.	A11	Adjust for MINIMUM deflection.

VHF OSCILLATOR ALIGNMENT FOR TUNER 42.98

Loosely couple a separate RF signal generator to the grid of the first video IF amplifier (V4) and tune it accurately to 45.75MC.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Fig. 6	Thru matching network (Fig. 6) to VHF antenna terminals.	213MC (10MC Swp.)	211.25MC 215.75MC	13	Vert. amp. thru 10KΩ to point Ⓥ. Low side to chassis.	A12	Adjust so that video RF and video IF markers coincide on response curve.
12.	"	"	207MC (10MC Swp.)	205.25MC 209.75MC	12	"	A13	Adjust position of loops so that video RF and video IF markers coincide on response curve. Adjustments are made by compressing or expanding coil turns.
			201MC (10MC Swp.)	199.25MC 203.75MC	11		A14	
			195MC (10MC Swp.)	193.25MC 197.75MC	10		A15	
			189MC (10MC Swp.)	187.25MC 191.75MC	9		A16	
			183MC (10MC Swp.)	181.25MC 185.75MC	8		A17	
			177MC (10MC Swp.)	175.25MC 179.75MC	7		A18	
13.	"	"	85MC (10MC Swp.)	83.25MC 87.75MC	6	"	A19	Adjust A19 (slug) so that video RF and video IF markers coincide on response curve.

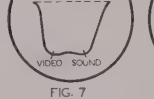


FIG. 7

FIG. 8

VHF OSCILLATOR ALIGNMENT FOR TUNER 42.98 (Cont)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Fig. 6	Thru matching network (Fig. 6) to VHF antenna terminals.	79MC (10MC Swp.)	77.25MC 81.75MC	5	Vert. amp. thru 10KΩ to point Ⓥ. Low side to chassis.	A30	Adjust (compress or expand coils) so that video RF and video IF markers coincide on response curve.
			69MC (10MC Swp.)	67.25MC 71.75MC	4		A31	
			83MC (10MC Swp.)	81.25MC 85.75MC	3		A32	
			57MC (10MC Swp.)	55.25MC 59.75MC	2		A33	

VHF RF AND MIXER ALIGNMENT FOR TUNER 42.98

The RF tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be required unless tubes are replaced in the tuner. Careful selection of the replacement tubes should eliminate the necessity of tuner realignment.
The antenna coils are mounted on the front wafer, RF coils on the second wafer from the front and the mixer coils on the third wafer from the front. The RF wafer has B+ on it and should not be touched with the hands or metal tools.
The oscillator coils (rear wafer)have been aligned under "Oscillator Alignment" and should not be touched.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Fig. 6	Thru matching network (Fig. 6) to VHF antenna terminals.	213MC (10MC Swp.)	211.25MC 215.75MC	13	Vert. amp. thru 10KΩ to point Ⓥ. Low side to chassis.	A24, A25, A26	Adjust in that order to obtain response similar to Fig. 7. A24 is adjusted by expanding or compressing coil turns.
16.	"	"	207MC (10MC Swp.)	205.25MC 209.75MC	12	"	A27, A28, A29	Adjust loops in order given to obtain response similar to Fig. 7.
			201MC (10MC Swp.)	199.25MC 203.75MC	11		A30, A31, A32	
			195MC (10MC Swp.)	193.25MC 197.75MC	10		A33, A34, A35	
			189MC (10MC Swp.)	187.25MC 191.75MC	9		A36, A37, A38	
			183MC (10MC Swp.)	181.25MC 185.75MC	8		A39, A40, A41	
			177MC (10MC Swp.)	175.25MC 179.75MC	7		A42, A43, A44	
17.	"	"	85MC (10MC Swp.)	83.25MC 87.75MC	6	"	A45, A46, A47	Compress or expand coil turns for response similar to Fig. 7.
			79MC (10MC Swp.)	77.25MC 81.75MC	5		A48, A49, A50	
			69MC (10MC Swp.)	67.25MC 71.75MC	4		A51, A52, A53	
			83MC (10MC Swp.)	81.25MC 85.75MC	3		A54, A55, A56	
			57MC (10MC Swp.)	55.25MC 59.75MC	2		A57, A58, A59	

UHF IF ALIGNMENT

Connect the bias as under "Video IF Alignment".
Remove the UHF plug from socket at VHF tuner.
Connect a 56Ω carbon resistor across the sweep generator output.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
18.	270Ω Carbon Resistor	High side to UHF socket pin 1 on VHF tuner. Low side to chassis.	43.5MC (10MC Swp.)	41.25MC 45.75MC	UHF Position	Vert. amp. thru 10KΩ to point Ⓥ. Low side to chassis.	A60, A61, A62	Adjust for response similar to Fig. 7 with markers above 80%. Replace UHF plug in socket.

UHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Two 120Ω Carbon Resistors	Across UHF antenna terminals with 120Ω in each lead.	475MC (10MC Swp.)	470MC	14 (Fully clockwise)	Vert. amp. thru 10KΩ to point Ⓐ. Low side to chassis.	A63	Adjust gain so that the sound notch is visable on the scope. Adjust to place sound marker in trap notch as in Fig. 8.
20.	"	"	887MC (10MC Swp.)	490MC	83 (Fully counter clockwise)	"	A64	"

UHF PRESELECTOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Set the UHF tuning shaft fully counter clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
21.	Two 120Ω Carbon Resistors	Across UHF antenna terminals with 120Ω in each lead.	887MC (10MC Swp.)	890MC	83 (Fully counter clockwise)	Vert. amp. to point Ⓥ. Low side to chassis.	A65, A66	Adjust by bending tabs in or out for response curve similar to Fig. 7.

To track the antenna and RF sections, start at the high end (the UHF shaft fully counter clockwise) and slowly rotate the UHF shaft clockwise. Keep the response curve on the scope by rotating the sweep generator simultaneously with the tuner shaft. Adjust the rotor blades on the antenna and RF sections by bending them to obtain satisfactory response curves all the way across the UHF band. To determine which way the blades should be bent, hold a metal soldering pick close to (but not touching) the stator. If this added capacity moves the response in the direction desired, the rotor blades should be bent nearer the stator blade. If the response moves in the wrong direction, less capacity is needed and the blades should be bent away from the stator blades. The bending should be done where the rotor enters the stator and with the blunt end of the pick. Make sure that the rotor blades do not short to the stator at any point during the complete rotation.

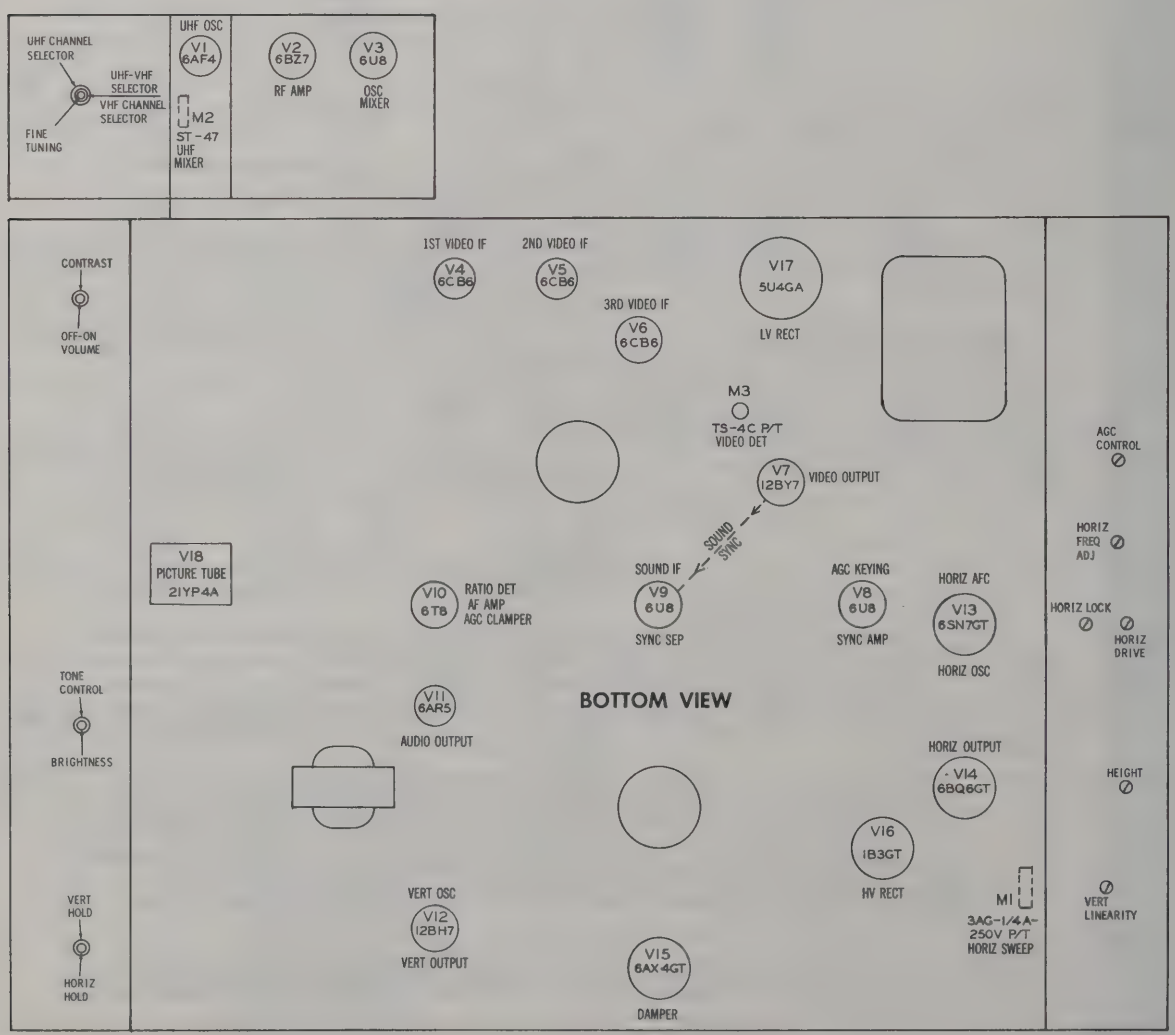
IF TRAP ADJUSTMENTS

The IF wave traps (A67 and A68) should be tuned to minimize interference caused by signals which fall within the Video IF band (40-48MC). Tune in a TV station on which the interference is noted and adjust for minimum interference in the picture. If no interference is noted, set A67 and A68 fully clockwise.

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	*† 8KΩ	10KΩ	. 1Ω	0Ω	0Ω	10KΩ	*† 8KΩ		
V 2	6BZ7	† 1KΩ	400KΩ	INF	. 1Ω	0Ω	INF	500KΩ	0Ω	0Ω
V 3	6U8	† 4. 5KΩ	480KΩ	† 17KΩ	. 1Ω	0Ω	† 3. 5KΩ	0Ω	0Ω	15KΩ
V 4	6CB6	60KΩ	47Ω	. 1Ω	0Ω	† 2. 3KΩ	† 2. 3KΩ	0Ω		
V 5	6CB6	280KΩ	47Ω	. 1Ω	0Ω	† 2. 3KΩ	† 2. 3KΩ	0Ω		
V 6	6CB6	. 2Ω	220Ω	. 1Ω	0Ω	† 2. 3KΩ	† 2. 3KΩ	0Ω		
V 7	12BY7	55Ω	5. 6KΩ	0Ω	. 1Ω	. 1Ω	0Ω	† 5KΩ	† 1. 8KΩ	0Ω
V 8	6U8	† 12KΩ	† 22KΩ	† 61Ω	. 1Ω	0Ω	280KΩ	† 1. 8KΩ	0Ω	200KΩ
V 9	6U8	† 20KΩ	47KΩ	† 10KΩ	. 1Ω	0Ω	† 10KΩ	0Ω	0Ω	2. 2Meg
V 10	6T8	INF	22KΩ	INF	. 1Ω	0Ω	500KΩ	0Ω	10Meg	† 220KΩ
V 11	6AR5	470KΩ	680Ω	0Ω	. 1Ω	† 900Ω	† 550Ω	NC		
V 12	12BH7	▲ 3. 5Meg	1. 8Meg	0Ω	. 1Ω	. 1Ω	▲ 5. 7KΩ	2. 2Meg	1KΩ	0Ω
V 13	6SN7GT	480KΩ	† 47KΩ	0Ω	1. 5Meg	† 25KΩ	350KΩ	. 1Ω	0Ω	
V 14	6BQ6GT	NC	0Ω	NC	† 8. 2KΩ	470KΩ	TP	. 1Ω	100Ω	TOP CAP ▲ 53Ω
V 15	6AX4GT	NC	NC	200KΩ	NC	† 70Ω	NC	. 1Ω	0Ω	
V 16	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲ 533Ω
V 17	5U4GA	NC	11KΩ	NC	26Ω	NC	24Ω	NC	11KΩ	
V 18	21YP4A	0Ω	0Ω	PIN 6 † 1. 8KΩ	PIN 10 ▲ 4. 7KΩ	PIN 11 † 160KΩ	PIN 12 . 1Ω			

* MEASURED IN "UHF" POSITION.
† MEASURED FROM PIN 8 OF V17.
▲ MEASURED FROM PIN 3 OF V15.
NC-NO CONNECTION.
TP-TIE POINT.



TUBE PLACEMENT CHART

FADA MODELS PC17, -EB, -LO, PC21, -EB, -K, -KD, -KLO, -LO, UPC17, -EB, -LO, UPC21, -EB, -K, -KD, -KLO, -LO

ALTERNATE VHF TUNER SCHEMATIC

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA: FADA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	NOTES
V1	UHF Oscillator	6AF4	6AF4	
V2	VHF RF Amplifier	6DZ7	6DZ7	
V3	VHF Mixer-Oscillator	6U8	6U8	
V4	1st. Video IF Amplifier	6CB6	6CB6	
V5	2nd. Video IF Amplifier	6CB6	6CB6	
V6	3rd. Video IF Amplifier	6CB6	6CB6	
V7	Video Output	12BY7	12BY7	
V8	AGC Keying-Sync Amplifier	6U8	6U8	
V9	Sound IF Amplifier-Sync Separator	6U8	6U8	
V10	Ratio Detector-AGC Clamper-AF Amplifier	6T8	6T8	
V11	Audio Output	6AR5	6AR5	6K6GT may be used in some versions
V12	Vert. Oscillator-Vert Output	12BH7	12BH7	
V13	Horiz. AFC-Horiz. Osc.	8BQ6GT	8BQ6GT	
V14	Horiz. Output	6AX4GT	6AX4GT	
V15	Damper	1B3GT	1B3GT	
V16	HV Rectifier	1B3GT	1B3GT	
V17	LV Rectifier	5U4GA	5U4G	5U4G may be used in some versions

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: FADA PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	NOTES
V18	21YP4A ①	21YP4A ①	21YP4A ①	21YP4A ②	① Aluminized ② Silver screen "88"
		21YP4	21YP4	21YP4	
	17HP4/ 17KP4	17HP4, 17KP4	17HP4/17KP4	17HP4/ 17KP4	
		17RP4		17RP4	
		17RP4B ①		17RP4B ①	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FADA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.	NOTES
C1A	±50	450	22-101	AFH3-45-50	DU5	FP385.5	TM-3127	T-160	R2180 *	
B	±80	350				TC72		MT-3302		
C	±10	350								
C2A	±40	350	22-120	AFH4-87	D066	FP431.7	TM-4025	Q-415	TVL-4747	
B	±10	450								
C	±40	450								
D	100	50								
C3	5	50	22-56	SR550V5	BR550	TC30	TD-5-50	MMT-0505	TVA-1303	
C4	25	50	22-66	PR550V25	BR255	TC36	TD-25-50	FM-0525	TVA-1306	

* Unit must be ordered from Mfgr.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FADA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	170									
C6	170									
C7	1000									
C8	1000									
C9	1.1									
C10	3.3			BPD-001	DD-103	K069	811-103	DC-831	5HK-DI	
C11	1000									
C12	5-10						N320-337-151			
C13	150									
C14	5-10									
C15	15									
C16	18			TCN-18	N032	M750K-180				
C17	.51									
C18	15			N750-DI15	TCN-15	Z021	M750K-150		5TCU-Q15	
C19	6.8					N013				
C20	8.8					N013				
C21	1000			BPD-001	DD-103	K069	811-103	DC-831	5HK-DI	
C22	4									
C23	1000			EF-001	MFT-1000					
C24	2.7									
C25	1000			EF-001	MFT-1000					
C26	1000			BPD-001	DD-103	K069	811-103	DC-831	5HK-DI	
C27	3									
C28	56									
C29	91									
C30	1000			EF-001	MFT-1000					
C31	1000			BPD-001	DD-103	K069	811-103	DC-831	5HK-DI	
C32	15			NP0-DI15	TCZ-15	Z021	NP0K-150		5TCC-Q15	
C33	1.2									
C34	1.5									
C35	10									
C36	15									
C37	1000			BPD-001	DD-103	K069	811-103	DC-831	5HK-DI	
C38	1000			EF-001	MFT-1000					
C39	1000			BPD-001	DD-102	K069	811-102	DC-831	5HK-DI	
C40	5									
C41	82				TCZ-82	TZ38	NP0-337-820			
C42	1000			EF-001	MFT-1000					
C43	1000			EF-001	MFT-1000					
C44	.1	200	12.49	P383N-1	DF-104	CUBZP1		PT401	2TM-P1	
C45	5000		17.44	BPD-005	DD-503	K072	811-005	DC-525	5HK-D5	
C46	47	200	12.92	P383N-47		CUBZH47		PT407	2TM-P47	
C47	1000		17.160	BPD-001	DD-102	K071	801-001	DC-5215	5HK-DI5	Note 1
C48	82		17.161		TCZ-82	TZ38	NP0-337-820			Note 2
C49	1500		17.160	BPD-001	DD-102	K071	801-001	DC-5215	5HK-DI5	
C50	1500		17.160	BPD-001	DD-102	K071	801-001	DC-5215	5HK-DI5	
C51	680		17.161	H560	DD-681	K071	801-561	DC-5358	5GA-T5	
C52	1500		17.160	BPD-001	DD-152	K071	801-001	DC-5215	5HK-DI5	
C53	1500		17.160	BPD-001	DD-152	K071	801-001	DC-5215	5HK-DI5	
C54	1	200	12.49	P383N-1	DF-104	CUBZP1		PT401	2TM-P1	
C55	470		17.163	S1470	D6-471	TP46	811-471	UC-5347	5GA-T47	Note 3
C56	680		17.161	S1680	D6-681	TP49	811-561	UC-5358	5GA-T5	Note 4
C57	1500		17.160	BPD-001	DD-152	K071	801-001	DC-5215	5HK-DI5	
C58	1500		17.160	BPD-001	DD-152	K071	801-001	DC-5215	5HK-DI5	
C59	1500		17.160	BPD-001	DD-152	K071	801-001	DC-5215	5HK-DI5	
C60	6.8		17.160	NP0-S1E.8	TCZ-6R8	TZ06	NP0A-6R8	ZT-5568	5TCCB-V68	
C61	10		17.71	DN00010	DD-100	G018	831-100	UC-541	5GA-Q2	
C62	6.8		17.161	NP0-S1E.8	TCZ-6R8	TZ06	NP0A-6R8	ZT-5568	5TCCB-V68	Note 5
C63	.1	400	12.75	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	

PARTS LIST AND DESCRIPTIONS (cont)

CAPACITORS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FADA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C64	8		17.127	NP0-S1E	TCZ-8R2	Z005	NP0A-8R2			
C65	39		17.103	S239	D6-390	TP38	GP2K-390	DC-5439	5GA-Q39	
C66	2		17.127	NP0-S1E	TCZ-2R2	Z005	NP0A-2R2		5TCCB-V22	
C67	1500		17.46	BPD-005	DD-153	K071	801-0015	DC-5315	5HK-D15	
C68	330	500	17.59	1469-00033	D6-331	SR5T33	811-331		MS-333	
C69	.0033	600	12.71	BPD-004	D6-392	CUB6D4	GP3-333-402	PT634	6TM-D4	
C70	.01	600	12.73	BPD-01	D6-103	CUB6E1	GP3-333-103	PT641	6TM-E1	
C71	.0047	400	12.66	BPD-0047	D6-472	CUB6D47	GP3-333-472	PT6247	6TM-D47	
C72	.0047	400	12.66	BPD-0047	D6-472	CUB6D47	GP3-333-472	PT6247	6TM-D47	
C73	.02	1000	12.82	BPD-03	D6-203	CUB6E3		PT643	6TM-E3	
C74	.0047	400	12.66	BPD-0047	D6-472	CUB6D47	GP3-333-472	PT6247	6TM-D47	
C75	10000		17.80	BPD-01	BD-103	K083	811-01	DC-531	5HK-D1	
C76	330		17.164	S1330	D6-331	TP43	GP2K-331	UC-5333	5GA-T33	
C77	.01	400	12.72	BPD-01	D6-103	CUB6E1	GP3-333-103	PT641	6TM-E1	
C78A	200							681-000	DC-522	
B	5000		†187.1	†PA-110	†PC-100	†1157M1	611-005	DC-525	‡V-1	
C	5000						611-005	DC-525		
C79	.0047	400	12.66	BPD-0047	D6-472	CUB6D47	GP3-333-472	PT6247	6TM-D47	
C80	.047	400	12.67	BPD-05	DF-503	CUB6S47		PT6147	6TM-S47	
C81	.1	400	12.75	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C82	.1	400	12.75	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C83	83		17.149	S183	D6-830	TZ38	GP2K-830		5GA-Q82	
C84	1000		17.153	BPD-001	DD-102	K069	801-001	DC-521	5HK-DI	
C85	68		17.152	N750-S168	TCN-68	TM18	N750L-680		5TCC-Q1	
C86	10		17.71	NP0-DI10	TCZ-10	Z018	NP0A-100	ZT-541	5TCC-Q1	
C87	.1	400	12.49	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C88	.022	400	12.82	BPD-02	DF-303	CUB4S22	S17-02	PT4122	4TM-S22	
C89	.47	200	12.83	P383N-47		CUBZH47		PT6047	2TM-P47	
C90	.047	400	12.67	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C91	330	500	17.59	1469-00033	D6-331	SR5T33	811-331		MS-333	
C92	.01	400	12.73	BPD-01	D6-103	CUB6E1	GP3-333-103	PT641	6TM-E1	
C93	1000	500	17.11	1464-001		1RS01	811-102	MC3255	MS-21	
C94	1000	500	17.10	1464-00068	D6-681	SR5T68	811-681	UC-5368	MS-368	
C95	.1	400	12.75	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C96	.33	200	12.91	P388N-33		CUB3P33		PT6033	3TM-P33	
C97	.1	400	12.75	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C98	50	2000	17.151	HVD-50-47	DD30-470	V3Q47	3KV-470	DC30447	20GA-Q47	
C99	1000	1000	17.144		DD-103				10HK-D1	
C100	10000	1000	17.144		DD-103				10HK-D1	

Note 1. Used in UHF-VHF receivers only.
Note 2. VHF receivers use a 68MMF unit (part #17.169) in this application.
Note 3. Some versions use a 500MMF unit (part #17.164) in this application.
Note 4. Some versions use a 470MMF unit (part #17.163) in this application.
Note 5. Not used in some versions.
† Items C78A, C78B, C78C, R73A, R73B and R73C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FADA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	350Ω		52.80	F3-2			UX488	Contrast (Panel)
B	500Ω			R2-41				Volume (Rear)
C	Switch			SB-1				Attach to R1B.
R2A	500Ω		53.81	F1-41		* QJ-378	UP55A	† Tone (Panel)
B	1Meg			R2-5J			UR1EL	Brightness (Rear)
R3A	1Meg		53.66	SBB-S10	RTV-110	* QJ-168	UF1EL	†† Vert. Hold (Panel)
B	50kΩ						UR54L	Horiz. Hold (Rear)
R4A	5000Ω	3	53.68	VK-135	A43-5000	WPD-5000	RE506L	Vert. Linearity (Wire Wound)
B	Shaft		Not Req.	Not Req.	FK3-1/4	Not Req.	Not Req.	Attach to R4A.
R5A	2.5Meg		53.24	AB-S3	A45-2.5Meg(-S)	AB-S3	SU-565	Height
B	Shaft		Not Req.	AK-1	FK3-1/4	AK-1	Not Req.	Attach to R5A.
R6A	50kΩ		53.69	B-31	A47-50K-S	QU-133	U-35	AGC-Note 1
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R6A.

Note 1: Some versions will use an alternate control Part No. 53.82.
* Concentrikit Equivalent: K-3 Kit, Base Elements and Shafts; B11-137 & P1-126 (Panel) B11-123 & R1-312 (Rear)

† Universal Replacement (Mallory Exact Duplicate Part No. UX1484).
†† Universal Replacement (Mallory Exact Duplicate Part No. UX1901).
‡ Concentrikit Equivalent: K-4 Kit, Base Elements and Shaft; B13-133 & P6-125 (Panel) B11-137 & R1-209 (Rear)

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FADA PART No.	IRC PART No.	NOTES
R7	10kΩ				
R8	270Ω			BTS-270	
R9	100Ω			BTS-100	
R10	56Ω			BTS-56	
R11	100kΩ			BTS-100K	
R12	1Meg 5%			BTS-1Meg 5%	
R13	750kΩ 5%			BTS-750K 5%	
R14	470Ω			BTS-470	
R15	15kΩ				
R16	2200Ω			BTA-2200	
R17	680Ω				
R18	10kΩ				
R19	470kΩ				
R20	10MEG				
R21	10kΩ				
R22	2200Ω			BTA-2200	
R23	1000Ω			BTS-1000	
R24	100Ω			BTS-100	
R25	150kΩ			BTS-150K	
R26	470Ω		33.173	BTS-470	
R27	470Ω		33.173	BTS-470	
R28	62kΩ 5%		33.292	BTS-62K 5%	
R29	220kΩ		33.91	BTS-220K	
R30	220kΩ		33.91	BTS-220K	
R31	10kΩ		33.11	BTS-10K	
R32	470Ω		33.173	BTS-470	
R33	470Ω		33.173	BTS-470	
R34	47Ω		33.197	BTS-47	
R35	39kΩ		33.303	BTS-39K	
R36	470Ω		33.173	BTS-470	
R37	220kΩ		33.91	BTS-220K	
R38	47Ω		33.197	BTS-47	
R39	47Ω		33.197	BTS-47	
R40	22kΩ		33.13	BTS-22K	Note 1
R41	470Ω		33.173	BTS-470	
R42	220Ω		33.5	BTS-220	
R43	5600Ω		33.126	BTS-5600	
R44	82Ω		33.125	BTS-82	
R45	22Ω		33.185	BTS-22	
R46	5000Ω	10	117.80	PW10-5000	
R47	102kΩ 5%		33.89	BTS-100K	
R48	47kΩ		33.83	BTS-47K	
R49	47kΩ		33.15	BTS-47K	
R50	100kΩ		33.99	BTS-100K	
R51	47kΩ		33.15	BTS-47K	
R52	33kΩ		33.14	BTS-33K	
R53	13kΩ		33.654	BTS-12K	
R54	3.3Meg 5%		33.239	BTS-3.3Meg5%	
R55	47Ω		33.197	BTS-47	
R56	15kΩ		33.12	BTS-15K	
R57	33kΩ		33.13	BTS-22K	
R58	10Meg		33.99	BTS-10Meg	
R59	330kΩ		33.18	BTS-220K	
R60	470kΩ		33.93	BTS-470K	
R61	470Ω		33.350	BTA-470	
R62	680Ω		33.118	BTA-680	
R63	22kΩ		33.13	BTS-22K	
R64	470kΩ		33.93	BTS-470K	
R65	3.3Meg		33.34	BTS-3.3Meg	
R66	47kΩ		33.158	BTA-47K	
R67	18kΩ		33.82	BTA-18K	
R68	330kΩ		33.18	BTS-330K	
R69	1Meg		33.33	BTS-1Meg	
R70	18kΩ		33.658	BTS-18K	
R71	4700Ω		33.9	BTS-4700	
R72	10kΩ		33.11	BTS-10K	
R73A	22kΩ			BTS-22K	
B	8200Ω		† 167.1	BTS-8200	
C	6200Ω			BTS-6200	
R74	1.5Meg		33.308	BTS-1.5Meg	
R75	2.7Meg			BTS-3.7Meg	Note 2
R76	10kΩ		33.11	BTS-10K	
R77	2.2Meg		33.34	BTS-2.2Meg	
R78	4700Ω	2	33.649	BTA-4700	
R79	560Ω		33.68		
R80	680Ω		33.68		

RESISTORS (cont)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FADA PART No.	IRC PART No.	NOTES
R81	150KΩ		32.90	BTS-150K	
R82	330KΩ		32.205	BTS-330K	
R83	820KΩ		32.22	BTS-820K	
R84	330KΩ		32.205	BTS-330K	
R85	82KΩ		32.144	BTS-82K	
R86	3900Ω		32.203	BTS-3900	
R87	68KΩ		32.16	BTS-68K	
R88	27KΩ		32.85	BTS-27K	
R89	150KΩ		32.90	BTS-150K	
R90	1.5Meg		32.208	BTS-1.5Meg	
R91	18KΩ		32.81	BTS-18K	
R92	47KΩ		32.15	BTS-47K	
R93	470KΩ		32.93	BTS-470K	
R94	47Ω		32.197		
R95	8200Ω	2	32.651		Note 3
R96	100Ω	2	32.635		
R97	33Ω		32.43		
R98	10KΩ		32.11		
R99	3.3Ω		32.62	BW½-3.3	
R100	1750Ω	20	117.98	2D-1750	
R101	22Ω		32.185	BTS-22	

Note 1. When L57 is Part No. 37.378, a 22KΩ ½W resistor is used in this application.
Note 2. Some versions use a 2.2Meg ½W resistor in this application (Part No. 32.34).
Note 3. Some versions use a 6.8K 2W resistor in this application.
† Items R73A, R73B, R73C, C78A, C78B, C78C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: FADA PART No.	Halldorson PART No	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
T1	117VAC	525VCT	6.3V		42.90		P6280 ③	P8334 ③	26R33 ① ②	R-18DC
	① 1.4A	② .180A	③ 3A	④ 5.3A						② ③

① Tape high HV winding, tape 5V ④ 3A winding.
② Parallel and phase 6.3V ③ 5A windings.
③ Tape 6.3V ③ 1.2A winding.
④ Parallel and phase 6.3V ③ 6A windings.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: FADA PART No	Halldorson PART No	Merit PART No	RCA PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Vert. Osc. Trans.	42.53	B6700	A-3090	209T1	V405	A-811	24A87	A-95X
T3	Horiz. Output Trans.	42.95	FB480 *	HVO-38 *		X-129*	A-8254 *	FLT-75 *	D-49 * ①
T4	Vert. Output Trans.	42.93	21804	A-3037	222T1	V313	A-8123	26S52	R-102X
T5A	Yoke(70°) Horiz.(24MH)	37.286	DF808 ②	MDF-75 ②		Y70F25 ②	DY-15A ②	Y-18 ②	T-19-1 ②
B	Vert. (44MH)								

① Drill new mounting hole(s).
② Use original horizontal damping network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI	IMPEDANCE: SEC	REPLACEMENT DATA: FADA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	6.2KΩ	3-4Ω	42.57	A-2880	A-3877	24D61	S-3X		

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V C IMP	REPLACEMENT DATA: FADA PART No	QUAM PART No	RCA TYPE No	NOTES
SP1	6½	PM	3-4Ω	107.56 ① 107.60 ② 107.58 ③	6A1	22W1	① Used in models UPC21, PC21, UPC21L0, PC21L0, UPC21E8 and PC21E8 ② Used in models UPC17, PC17, UPC17L0, PC17L0, UPC17K8 and PC17K8 ③ Used in models UPC18, PC18, UPC21K0, PC21K0, UPC21E0 and PC21E0

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: FADA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	UHF Ant. Coil	0Ω						
L2	UHF Ant. Coil	0Ω						
L3	Fil. Choke	0Ω						
L4	Fil. Choke	0Ω						
L5	Cathode Choke	0Ω						
L6	RF Choke	0Ω						
L7	UHF Osc. Coupling Coil	0Ω						
L8	UHF IF Coil	0Ω						
L9	VHF Ant. Matching Trans	.5Ω	.5Ω					
L10	VHF Ant. Matching Trans	.5Ω	.5Ω					
L11	IF Trap Coil	.5Ω						
L12	FM Trap Coil	0Ω						
L13	IF Trap Coil	.5Ω						
L14	VHF Ant. Coil	0Ω						Channel 13.
L15	VHF Ant. Coil	0Ω						
L16	UHF IF Coil	0Ω						
L17	UHF IF Coil	1.5Ω						
L18	Fil. Choke	0Ω						
L19	Neut. Coil	0Ω						
L20	VHF RF Coil	0Ω						Channel 13.
L21	VHF RF Coils	0Ω						
L22	UHF IF Coil	0Ω						

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
Horiz. Out. Plate Lead	5	5	5	5	5	5	5
8	4	4	4	4	4	4	6
7	4	4	4	4	4	4	6
NC-See Note	NC-See Note	NC-See Note	NC-See Note	NC-See Note	NC-See Note	NC-See Note	NC-See Note
6	3 ②	3	3	3	3	3	3
1	3	3	3	3	3	3	3
3	1	1	1	1	1	1	4
5	2	2	2	2	2	2	3
2	2	2	2	2	2	2	3
Special Note	3	3	3	3	3	3	3

③ Connect resistor R98 in series with capacitor C98 across yoke terminals 3 and 7. Adjust values if necessary.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	FADA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L23	VHF Mixer Grid Coil	0Ω						Channel 13.
L24	VHF Mixer Grid Coils	0Ω						
L25	UHF IF Coil	0Ω						
L26	Fil. Choke	0Ω						
L27	RF Coil	0Ω						
L28	RF Coil	0Ω						
L29	VHF Osc. Coil	0Ω						Channel 13.
L30	VHF Osc. Coils	0Ω						
L31	VHF Osc. Coil	0Ω						Channel 6.
L32	RF Coil	1.5Ω						
L33	Conv. Plate	.1Ω						
L34	1st. Video IF	0Ω	.1Ω	37.276	17-5001	TV-125	6234	
L35	2nd. Video IF	.2Ω	.2Ω	37.277	17-5002	TV-127	6232	Includes 41.25MC Trap.
L36	Fil. Choke	0Ω		37.89	19-3001	TV-189	6175	.6 Microhenries.
L37	3rd. Video IF	.2Ω	.2Ω	37.299*	17-5003	TV-128	6233	Includes 47.25MC Trap.
L38	4th. Video IF	.2Ω	.2Ω	37.279	17-5004	TV-125	6234	
L39	Series Peaking Coil	1.3Ω		37.300				12 Microhenries.
L40	Series Peaking Coil	4.6Ω		37.234	19-3125		6153	120 Microhenries.
L41	Shunt Peaking Coil	18Ω		37.235	19-3660		6146	600 Microhenries.
L42A B	4.5MC Trap Sound IF	1.8Ω	1.8Ω	37.252				
L43	Series Peaking Coil	6.5Ω		37.236	19-3180■	TV-184■	6180■	190 Microhenries; Wound On 18KΩ Resistor.
L44	Shunt Peaking Coil	11Ω		37.237	19-3250	TV-185	6181	245 Microhenries.
L45	Ratio Det.	5.5Ω	1.9Ω CT	37.253	17-3497	TV-115	6205	Tertiary Winding .5Ω.
L46	RF Choke	8.2Ω		37.288	19-1005		4612	10 Microhenries; IRC Part #CL-1.

* Alternate Part #37-278.
■ Parallel With 18KΩ Resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	FADA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L47	22Ω	55Ω	37.219	20-1402†	TV-162†	6183†	205R1†	H-100†	HS-3†	Waveform Winding - 46Ω.

† Reverse coil mtg. in can.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	FADA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L48	.180A	61Ω	1.5HY	42.91	C5030 ①	C2974	C2325 ①	26C43	C-21X

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FADA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG P/T	1/4A 250V	122.32		318.250 (3AG P/T 1/4A)		GJV 1/4	

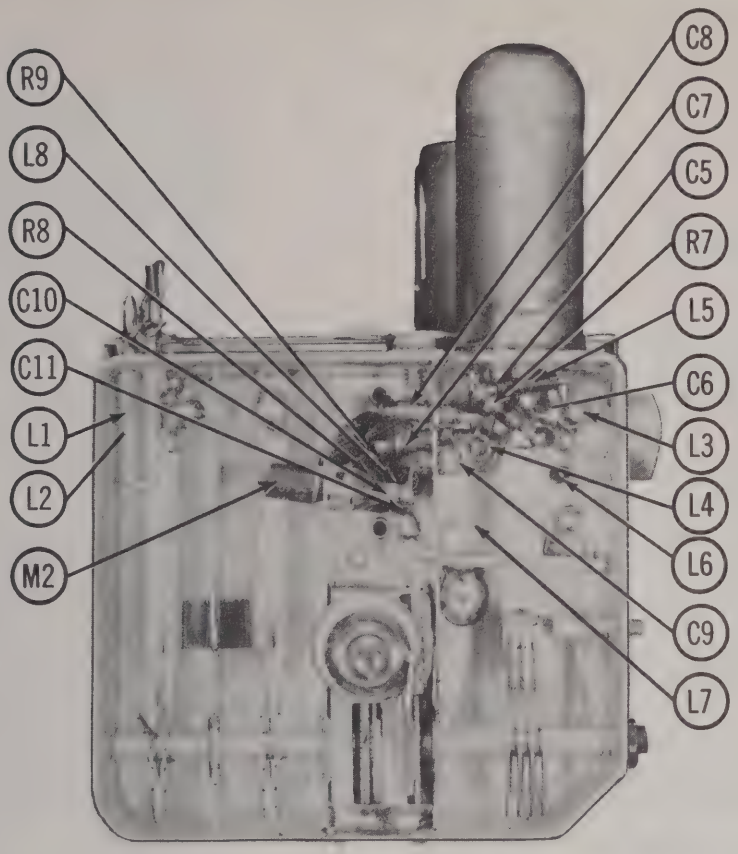
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		FADA PART No.	SYLVANIA PART No.	
M2	ST-47 *		1N82 or 1N82A	UHF Mixer (Clip in)
M3	TS-4C †	172.1	1N60	Video Det. (Pigtail)

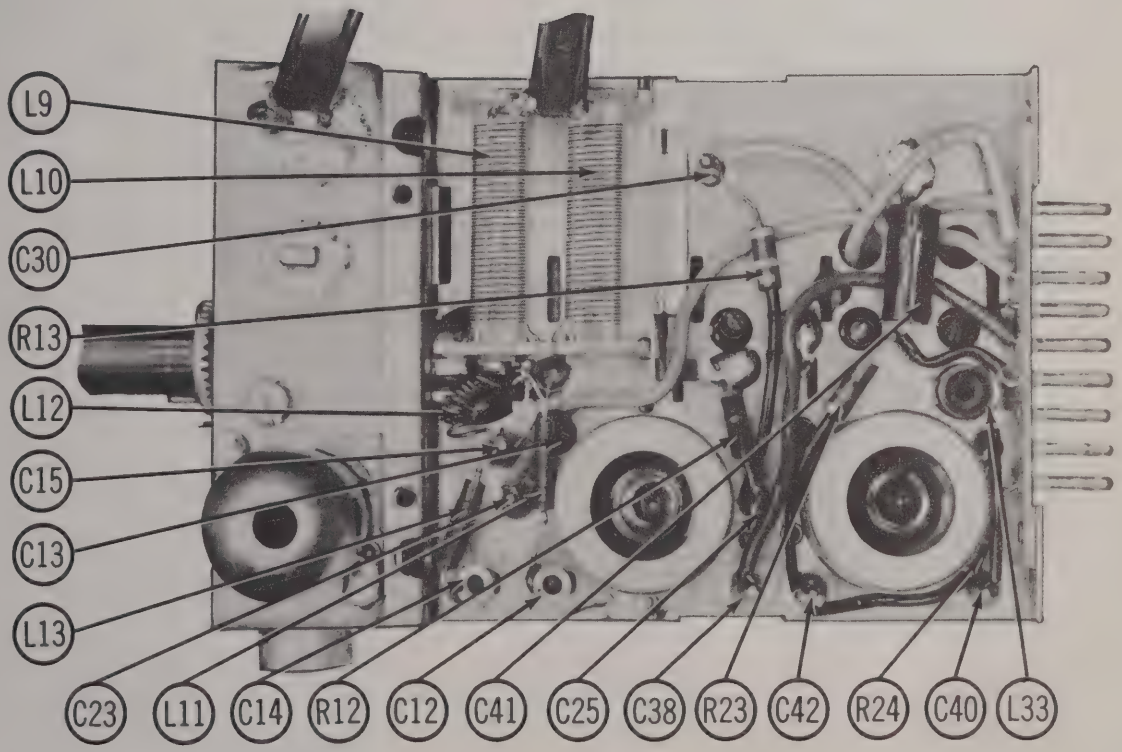
* Some versions may use crystal diode types 1N82 or 1N82A in this application.
† Some versions may use crystal diode type 1N64 in this application.

MISCELLANEOUS

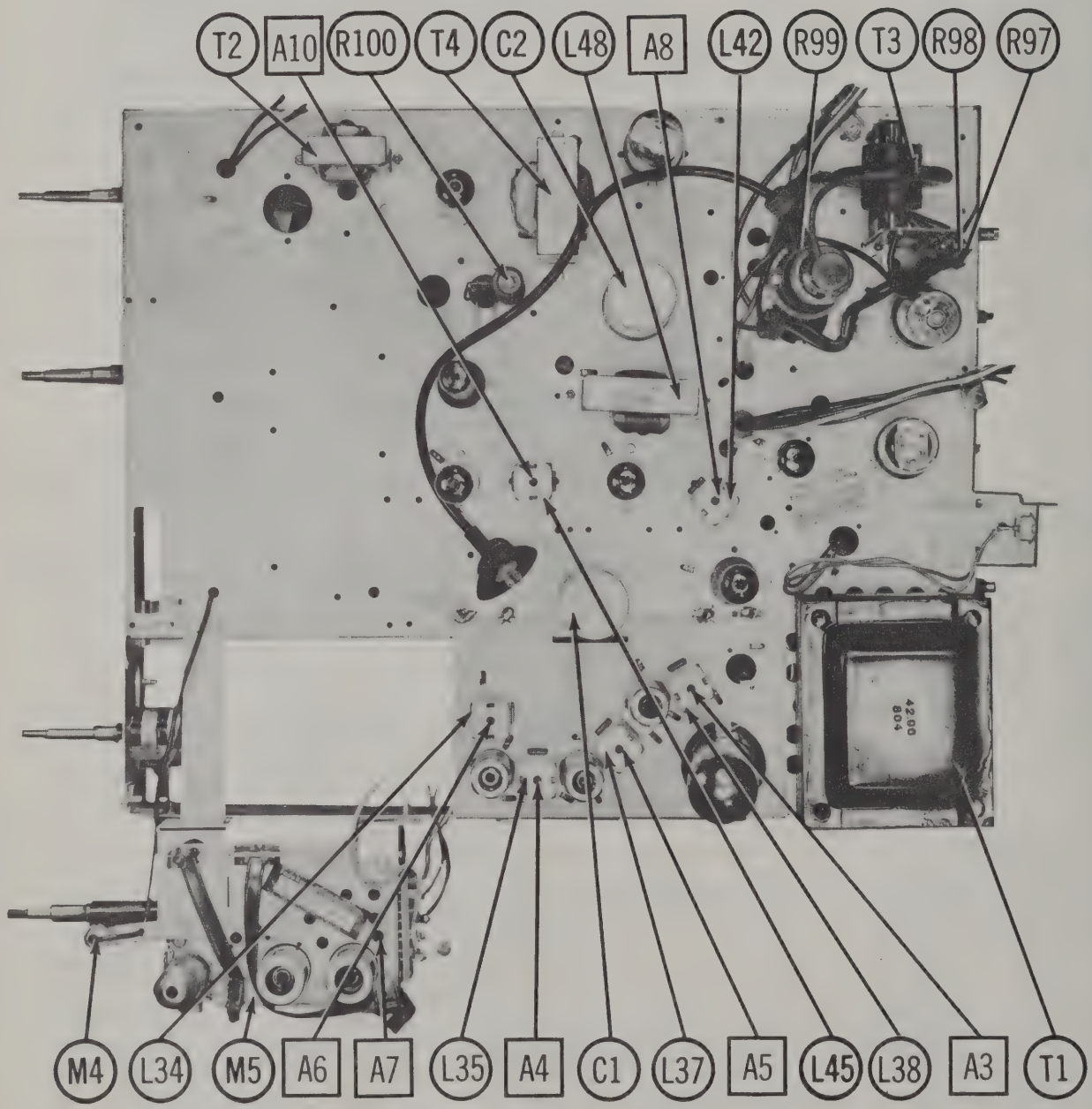
ITEM No.	PART NAME	FADA PART No.	NOTES
M4	Dial Light		#47
M5	Tuner	42.98	VHF-UHF combination, VHF tuner only, part #42.97
M6	Centering Device	112.37	
M7	Ion Trap	112.39	
B3	Trimmer Cap.	132.14	Horiz. Lock (10-160MMF)
B4	Trimmer Cap.		Horiz. Drive (40-370MMF)
	Cabinet	97.543M	Models UPC17, PC17
	Cabinet	97.543LO	Models UPC17LO, PC17LO
	Cabinet	97.543EB	Models UPC17EB, PC17EB
	Cabinet	97.552M	Models UPC21, PC21
	Cabinet	97.552LO	Models UPC21LO, PC21LO
	Cabinet	97.552EB	Models UPC21EB, PC21EB
	Cabinet	97.506M	Models UPC21K, PC21K
	Cabinet	97.506LO	Models UPC21KLO, PC21KLO
	Cabinet	97.562	Models UPC21KD, PC21KD
	Safety Glass	92.594	Models UPC17, UPC17LO, UPC17EB
	Safety Glass	92.604	Models UPC21, UPC21LO, UPC21EB
	Safety Glass	92.566	Models UPC21K, UPC21KLO
	Safety Glass	92.630	Model UPC21KD



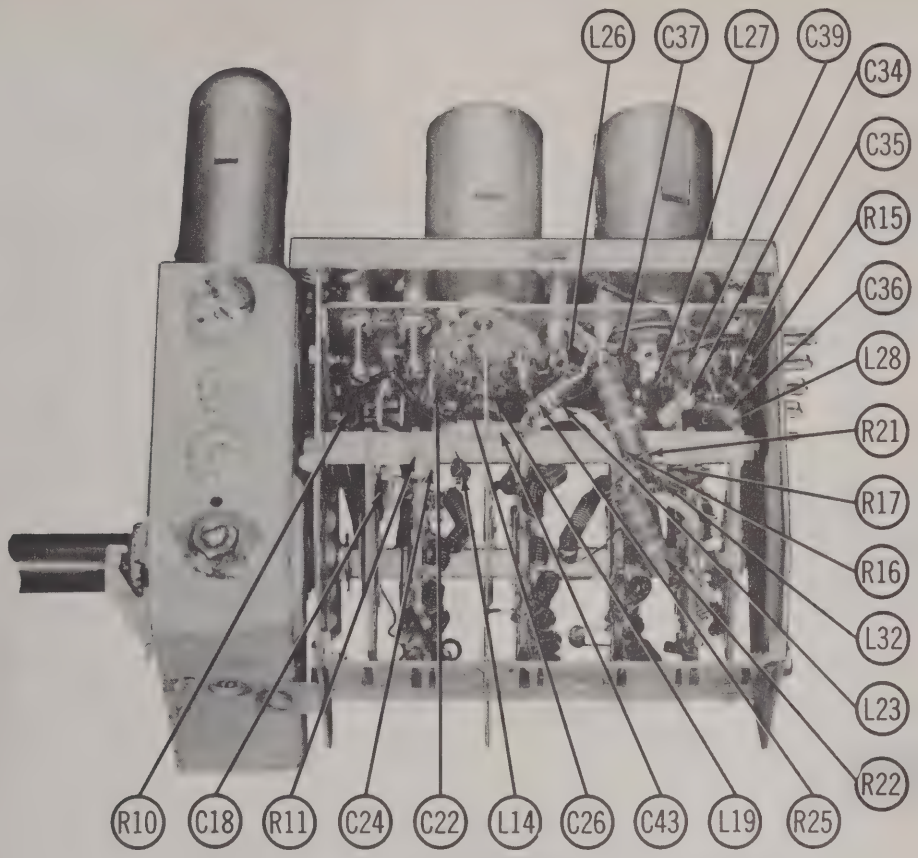
UHF TUNER FRONT VIEW



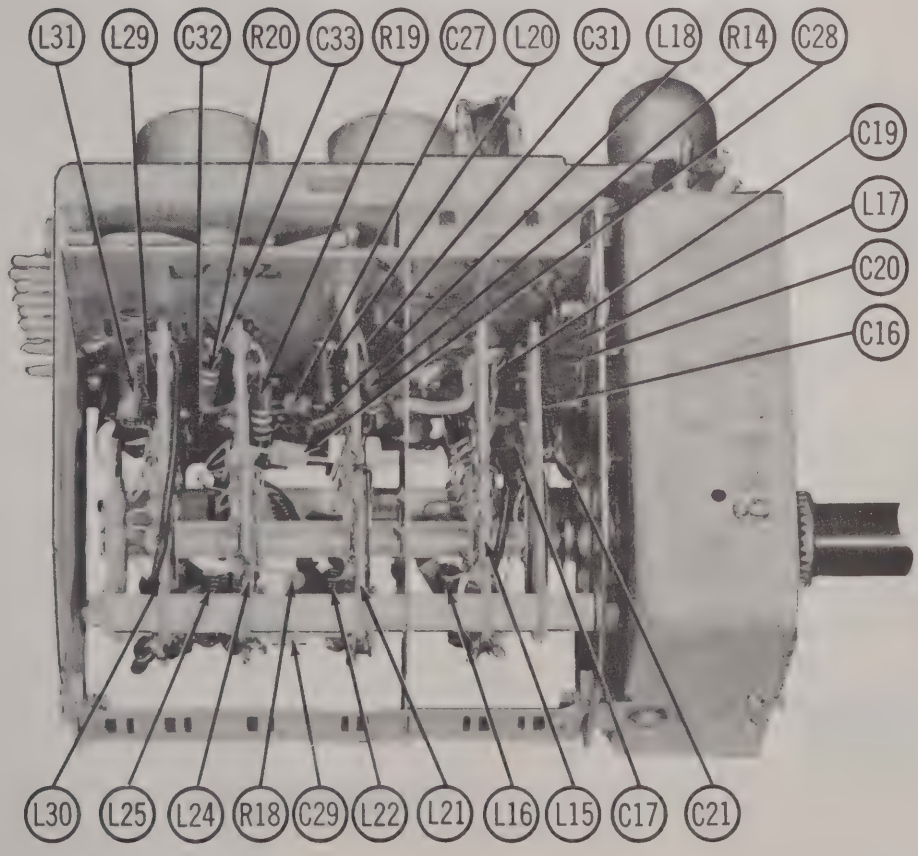
VHF-UHF TUNER TOP VIEW



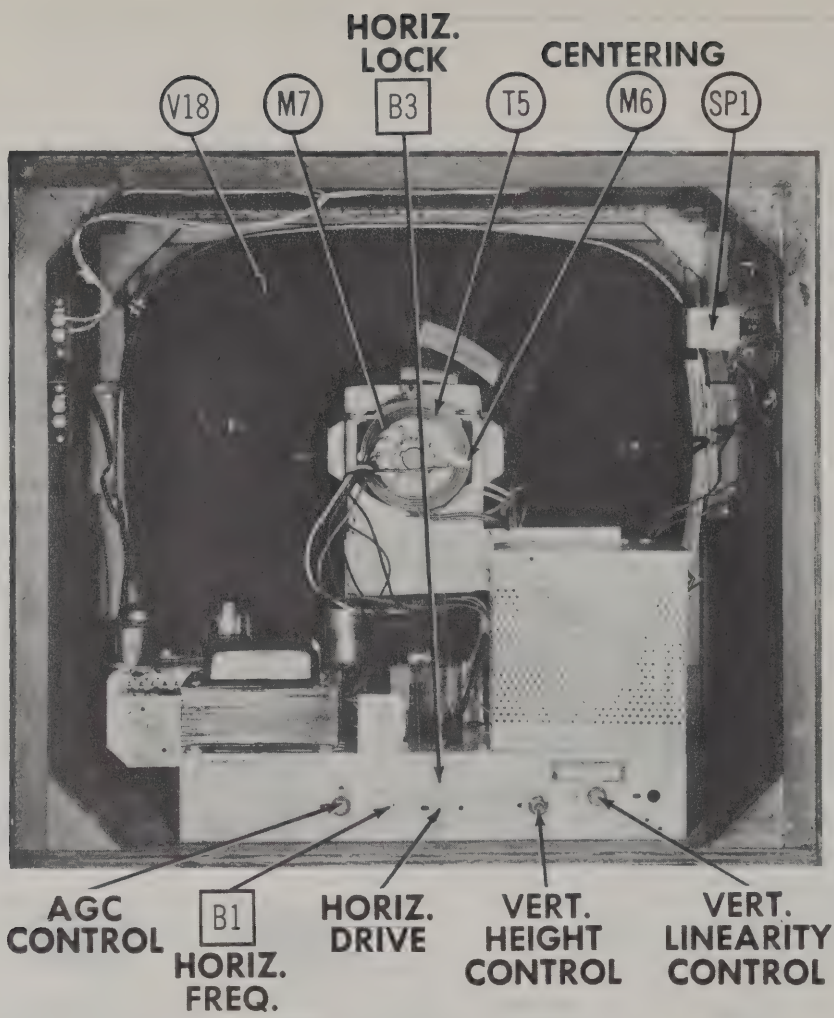
CHASSIS TOP VIEW



UHF-VHF TUNER-RIGHT SIDE



UHF-VHF TUNER-LEFT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Pre-set horizontal lock trimmer (B3) one turn counter clockwise f tight and the horizontal drive trimmer (B4) two turns counter clock wise from tight. Turn the set on and tune in a TV station preferably a test pattern.

HORIZONTAL FREQUENCY ADJUSTMENT

1. Rotate the horizontal hold control over its entire range. If picture does not remain in sync over most of its range, adjust the horizontal frequency slug (B1) for best sync.

2. If unable to adjust B1 for proper horizontal hold range, adjust the horizontal phase slug (B2) counter clockwise a few turns and repeat step 1. Picture should remain in horizontal sync, if not, continue with "Horizontal Phase Adjustment".

HORIZONTAL PHASE ADJUSTMENT

1. Short together terminals "C" and "D" of the horizontal oscillator coil (L47).

2. Set the horizontal hold to its maximum counter clockwise position.

3. Adjust B1 until picture just locks in horizontally.

4. Remove short from terminals "C" and "D" of L47. If picture loses sync with short removed, adjust B2 clockwise until picture falls into sync.

5. Connect the vertical input lead of an oscilloscope to terminal "C" of L47. Adjust the phase slug (B2) until broad and narrow peaks are of equal amplitude as shown in Fig. 8. While adjusting B2 keep the picture in sync by turning the horizontal hold control clockwise. Disconnect scope from receiver.

6. Set the horizontal hold control fully clockwise and adjust B1 until picture remains in sync while switching off channel and back. With the horizontal hold control at mid-position the picture should fall in sync when switching off channel and back again.

HORIZONTAL LOCK ADJUSTMENT

1. Turn the horizontal hold control maximum counter clockwise. Switch off channel and back again. If the picture does not lose sync, turn B1 counter clockwise until the picture loses sync when switching off channel and back again. Adjust B1 clockwise until the picture just pulls into sync.

2. Turn the horizontal hold control maximum clockwise. Switch off channel and back again. If the picture does not pull into sync, turn the horizontal lock (B3) clockwise until the picture pulls into sync.

3. Due to the reaction between B1 and B3 it may be necessary to repeat steps 1 and 2 several times before proper synchronization is obtained. When properly adjusted, the picture should remain in sync at both extreme settings of the horizontal hold control when switching off channel and back again.

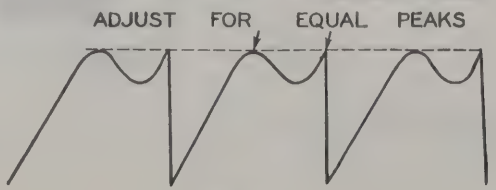
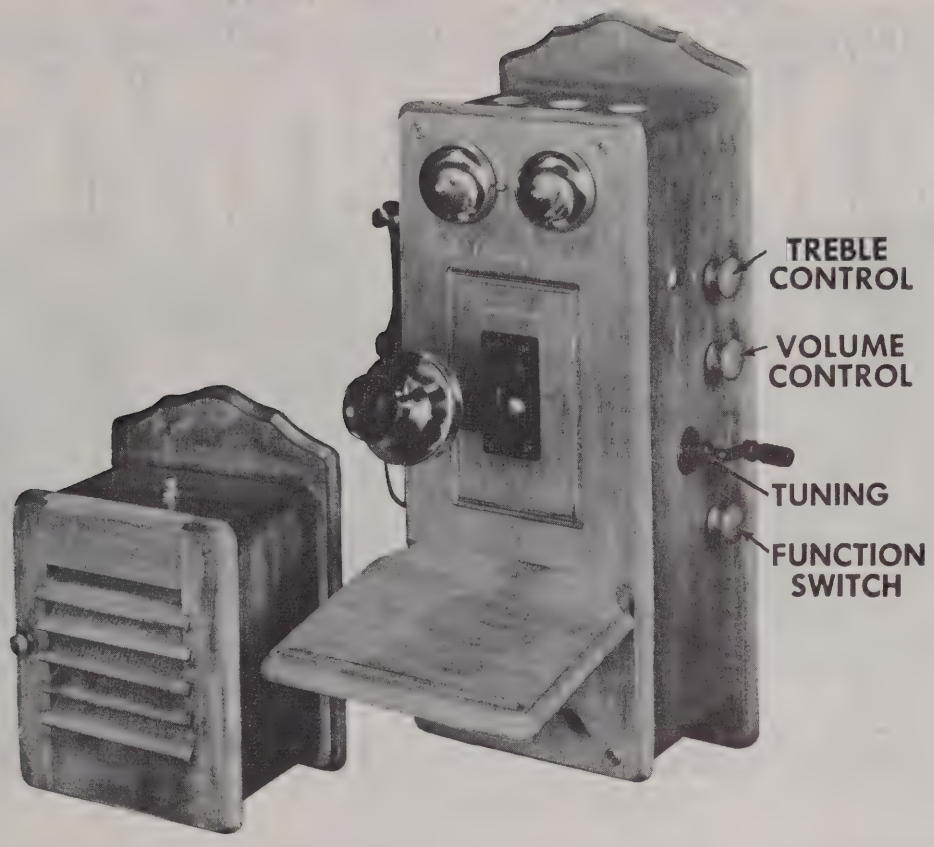


FIG. 9

GUILD
MODEL 665



GUILD
MODEL 665

TRADE NAME	Guild Model 665
MANUFACTURER	Guild Radio & Television Co., 460 N. Eucalyptus Ave., Inglewood, Calif.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver And Intercommunication System
TUBES (Six)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 12AV6 Preamp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-DC RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535KC - 1720KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.02MFD	High side to antenna stator lug on tuning gang. Low side to chassis.	455KC (400~ mod).	Tuning gang fully closed.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. Repeat process until no further increase is noted.
2.	100MMF	High side to antenna clip on antenna. Low side to chassis.	1600KC	1600KC	"	A5	RF & osc. trimmer adjustment should be made with chassis installed in cabinet due to dial location. Two removable plugs are located on top of cabinet. Remove plugs. Adjust A5 for maximum output.
3.	"	"	1500KC	Tune to 1500KC signal.	"	A6	Adjust for maximum output.

PROPERTY OF
L. F. DUNKLEY SHIP
3000 HEATH ST.
DENVER, COLORADO

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

GUILD MODEL 665

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA: GUILD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	NOTES
V1	Converter	12BE6	12BE6	
V2	IF Amplifier	12BA6	12BA6	
V3	Det. -AVC-AF Amplifier	12AV6	12AV6	
V4	Preamplifier	12AV6	12AV6	
V5	Output	50C5	50C5	
V6	Rectifier	35W4	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: GUILD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■50	150		AFH2-15	B015	F[illegible]13	TMD12	D-065	TVL-2432
B	▲30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GUILD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	470			BPD-00047	DD-471	K060	831-471	UC-5347	5GA-T47	
C3	.05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C4	50			SI50	D6-500	TP30	GP1K-500	UC-545	5GA-Q5	
C5	2000			BPD-002	DD-202	K072	801-002	DC-522	5HK-D2	
C6	200			SI200	D6-201	TP38	GP2K-201	UC-532	5GA-T2	
C7	1000			BPD-001	DD-102	K069	801-001	DC-522	5HK-D1	
C8	220			BPD-00022	DD-221	G051	811-221	UC-5322	5GA-T22	
C9	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C10A	5000									
B	250		♦	♦PA-112-1	♦PC-70	♦112TM1	♦1406-01		♦T-3	
C										
C11	.01	400		BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C12	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C13	.05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C14	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	

♦ Items C10A, C10B, C10C, R13A and R13B are combined in one unit. When replacing items separately, C10B and C10C should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GUILD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½		B-60	A47-500K-Z	Q13-133	U-48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	½		B-60	A47-500K-Z	Q13-133	U-48	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	20Ω	2		VK-110	A43-20		C20P	Master Volume (wire wound)
B	Shaft			Not Req.	FKS-1/2		Not Req.	Attach to R3A
R4A	20Ω	2		VK-110	A43-20		C20P	Remote Volume (wire wound)
B	Shaft			Not Req.	FKS-1/2		Not Req.	Attach to R4A

RESISTORS

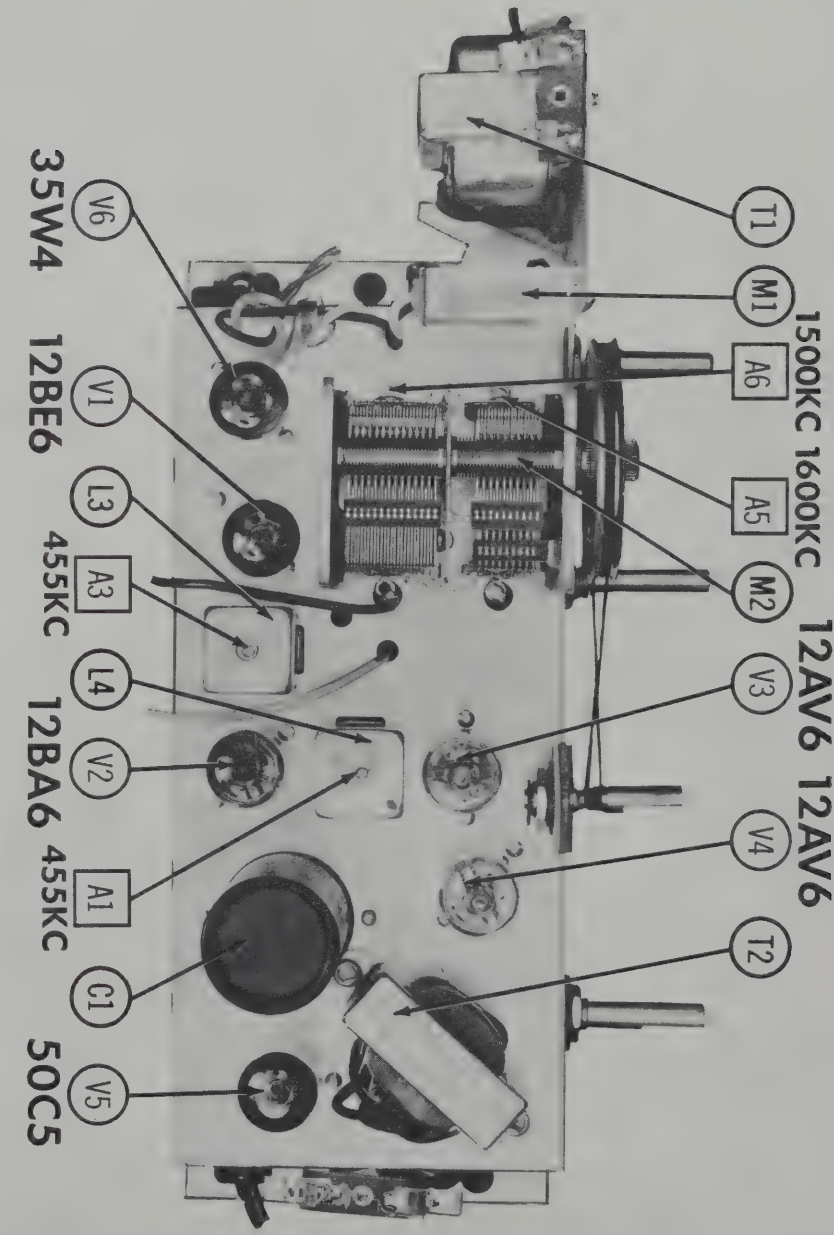
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: GUILD PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R5	22KΩ	½		BTS-22K	
R6	220Ω	½		BTS-220	
R7	1.8Meg 5%	½		BTS-1.8Meg 5%	Note 1
R8	100Ω	½		BTS-100	
R9	4.7Meg	½		BTS-4.7Meg	Note 2
R10	270KΩ	½		BTS-270K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: GUILD PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R11	150KΩ	½		BTS-150K	
R12	4.7Meg	½		BTS-4.7Meg	Note 2
R13A	500KΩ		♦	BTS-470K	
B	500KΩ			BTS-470K	
R14	150Ω	½		BTS-150	
R15	6.2Ω 5%	1			Note 3
R16	1000Ω	1		BTA-1000	

♦ Items R13A, R13B, C10A, C10B, C10C are combined in one unit.

Note 1. Some versions use a 2.2Meg 1/2 W resistor in this application.
Note 2. Some versions use a 6.8Meg 1/2 W resistor in this application.
Note 3. Some versions use a 5.1Ω 1 W 5% resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (INPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	GUILD PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3-4Ω	25KΩ	425-2	G2008	A-2923	A-4744	20A04	A-7J①	① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	GUILD PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2.5KΩ	3-4Ω	442	Z1001	A-3025	A-3332	22S45	S-1X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	GUILD PART No.	QUAM PART No.	RCA TYPE No.	
SP1	5"	PM	3-4Ω		5A07	205S2	
SP2	5"	PM	3-4Ω		5A07	205S2	

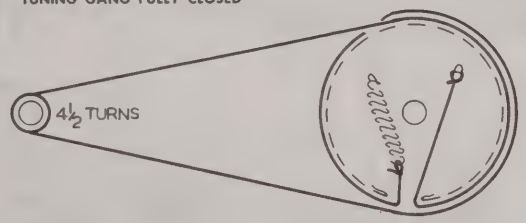
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	GUILD PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.8Ω						Tapped @ .7Ω
L2	Osc. Coil	1Ω	9Ω		14-1074	BC-394	70-OSC	
L3	Input IF	14Ω	14Ω	TRI-455-1	16-6758	BC-352	12-C1	
L4	Output IF	14Ω	14Ω	TRI-455-2	16-6758	BC-353	12-C2	

MISCELLANEOUS

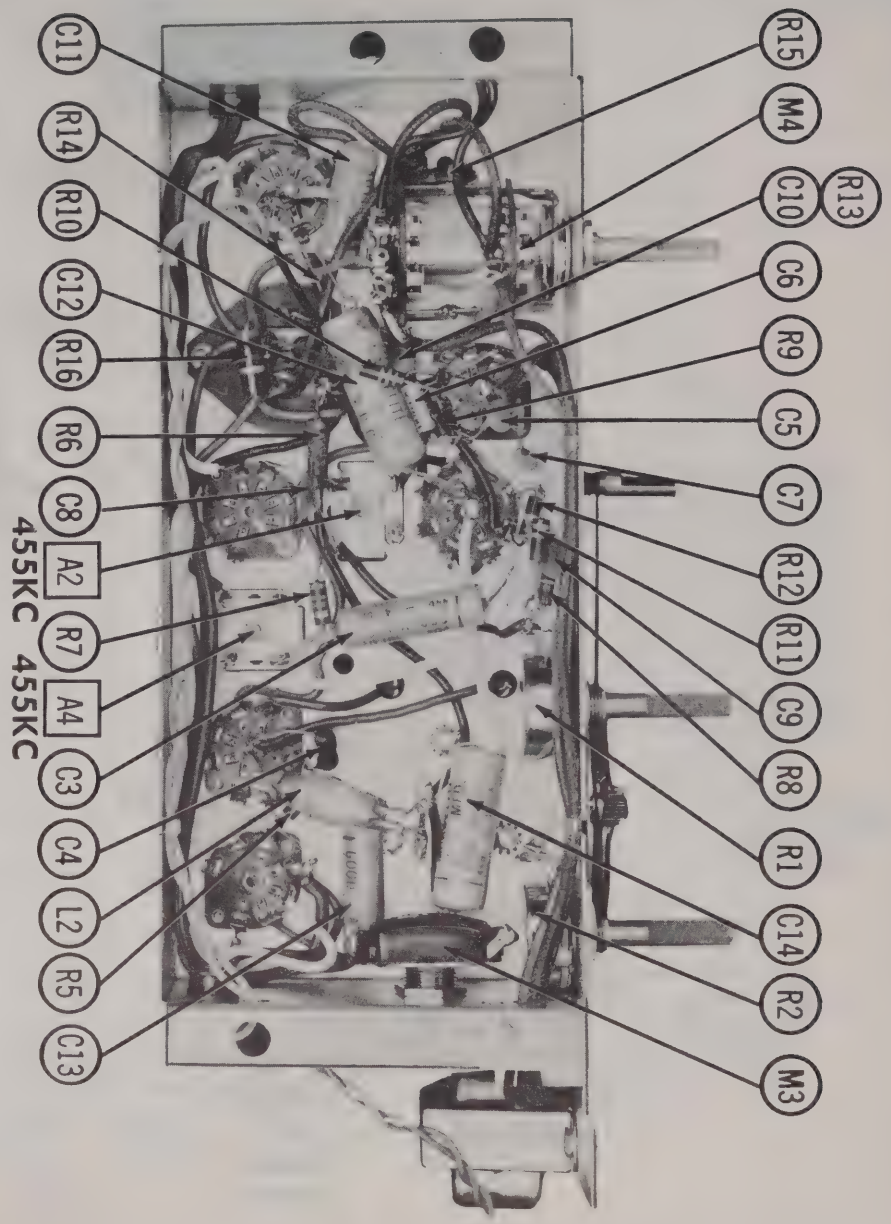
ITEM No.	PART NAME	GUILD PART No.	NOTES
M1	Dial Light		#44
M2	Tuning Cap.	2080	2 gang (30-515MMF, 24-190MMF.)
M3	Switch		On-Off (power - pushbutton type)
M4	Switch		Function (5 pole - 4 position; rotary, wafer type)
M5	Switch Assy.		Remote speakers control (consists of 4 SPDT slide type switches).

TUNING GANG FULLY CLOSED

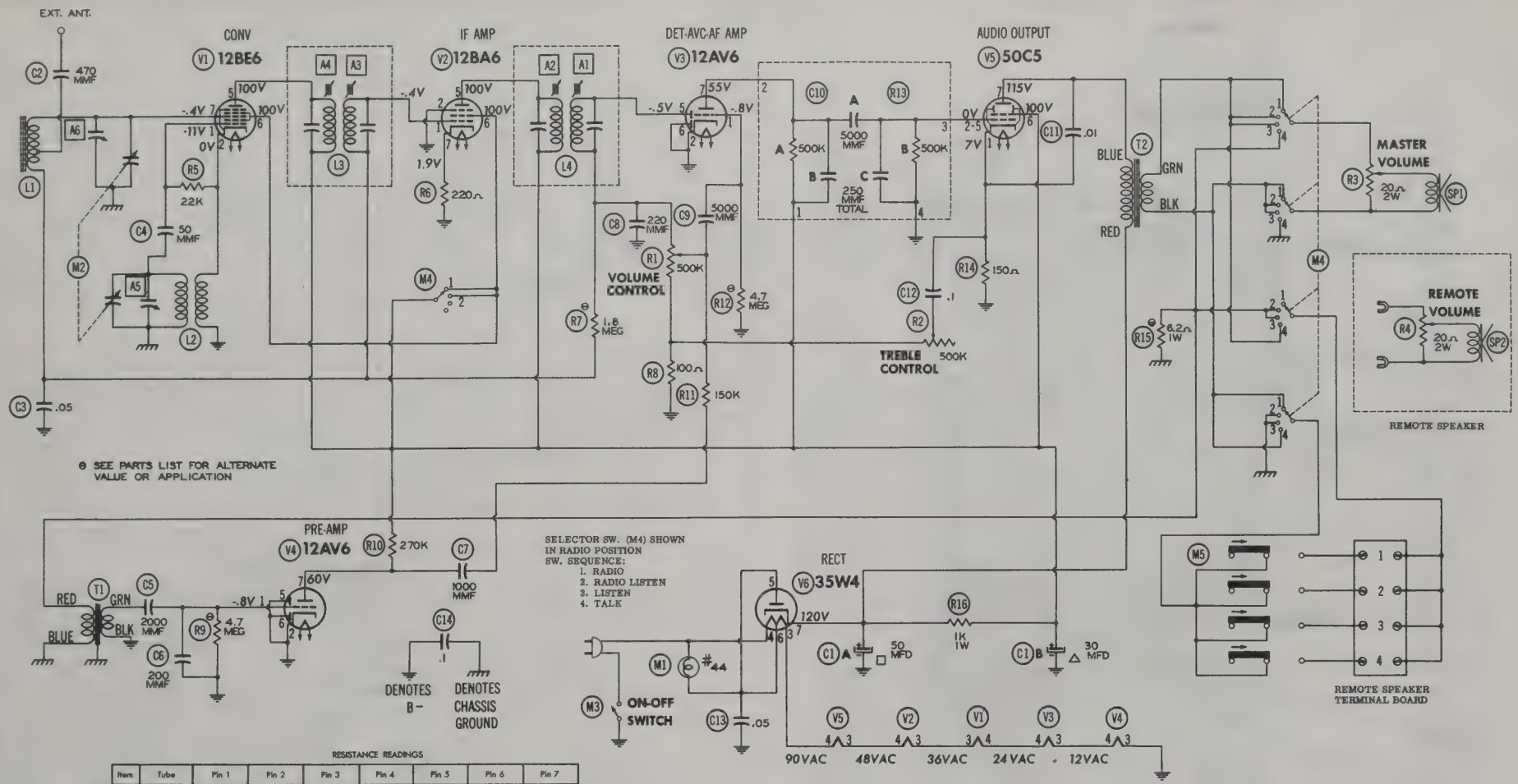


DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



GUILD MODEL 665



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	36Ω	24Ω	↑ 1KΩ	↑ 1KΩ	2.3Meg
V 2	12BA6	2.3Meg	0Ω	36Ω	48Ω	↑ 1KΩ	↑ 1KΩ	220Ω
V 3	12AV6	4.7Meg	0Ω	12Ω	24Ω	500KΩ	0Ω	↑ 501KΩ
V 4	12AV6	4.7Meg	0Ω	0Ω	12Ω	0Ω	0Ω	↑ 271KΩ
V 5	50C5	150Ω	500KΩ	48Ω	98Ω	500KΩ	↑ 1KΩ	↑ 180Ω
V 6	35W4	NC	NC	98Ω	120Ω	118Ω	118Ω	30KΩ

ALL MEASUREMENTS TAKEN IN RADIO POSITION.
↑ - MEASURED FROM PIN 7 OF V6.
NC - NO CONNECTION

IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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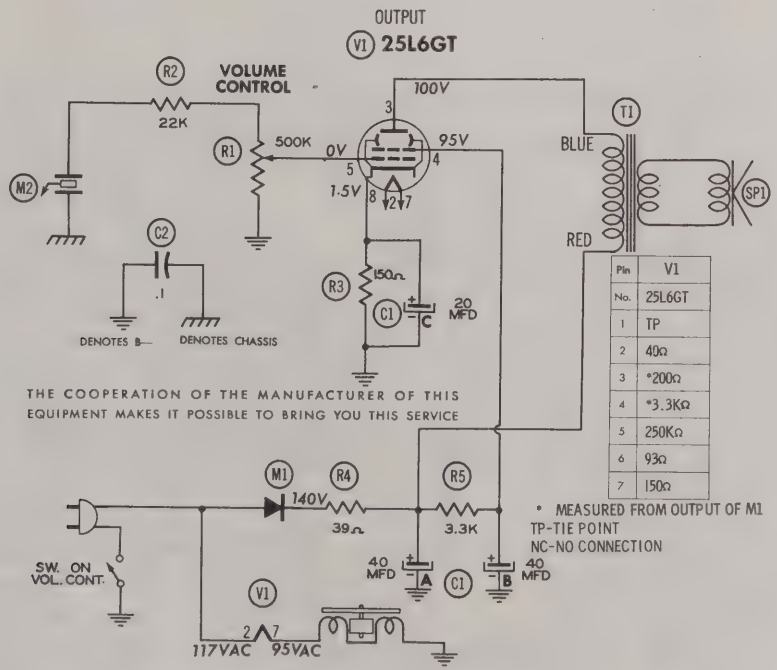
MITCHELL
MODEL 1265

TRADE NAME	Mitchell Model 1265
MANUFACTURER	Mitchell Mfg. Co., 2525 Clybourn Ave., Chicago 14, Ill.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player
TUBES (One)	Type 25L6GT Output
POWER SUPPLY	105-125 Volts AC-60 Cycles RATING .31 Amp. @ 117 Volts AC

MITCHELL
MODEL 1265



Pin No.	V1 25L6GT
1	TP
2	40Ω
3	*200Ω
4	*3.3KΩ
5	250KΩ
6	93Ω
7	150Ω

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319-7

L. F. SCHOONENSHIP
3824 ELIZABETH ST.
DENVER, COLORADO

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F632

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA		NOTES
		MITCHELL PART No.	STANDARD REPLACEMENT	
V1	Output	25L6GT	25L6GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MITCHELL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150		AFH3-76	C055	FP310	TMT-61	T-285	TVL-3424
B	40	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MITCHELL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.1	200		P288-1	DF-104	CUB2P1		PT401	2TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MITCHELL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500KΩ	½	BA012-236	AB-60				Volume & switch
B	Shaft		Not Req.	AK-4				Attach to R1A
C	Bushing		Not Req.	AK-26				Attach to R1A
D	Switch		Not Req.	KB-1				Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MITCHELL PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	
R3	150Ω	½		BTS-150	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MITCHELL PART No.	IRC PART No.	
R4	39Ω	½		BTS-39	
R5	3300Ω	½		BTS-3300	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MITCHELL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.4KΩ	3.3Ω		Z1101	A-3025	A-3332	26S58	S-12X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MITCHELL PART No.	QUAM PART No.	RCA TYPE No.	
SP1	4"	PM	3.3Ω		4A07	223S1	

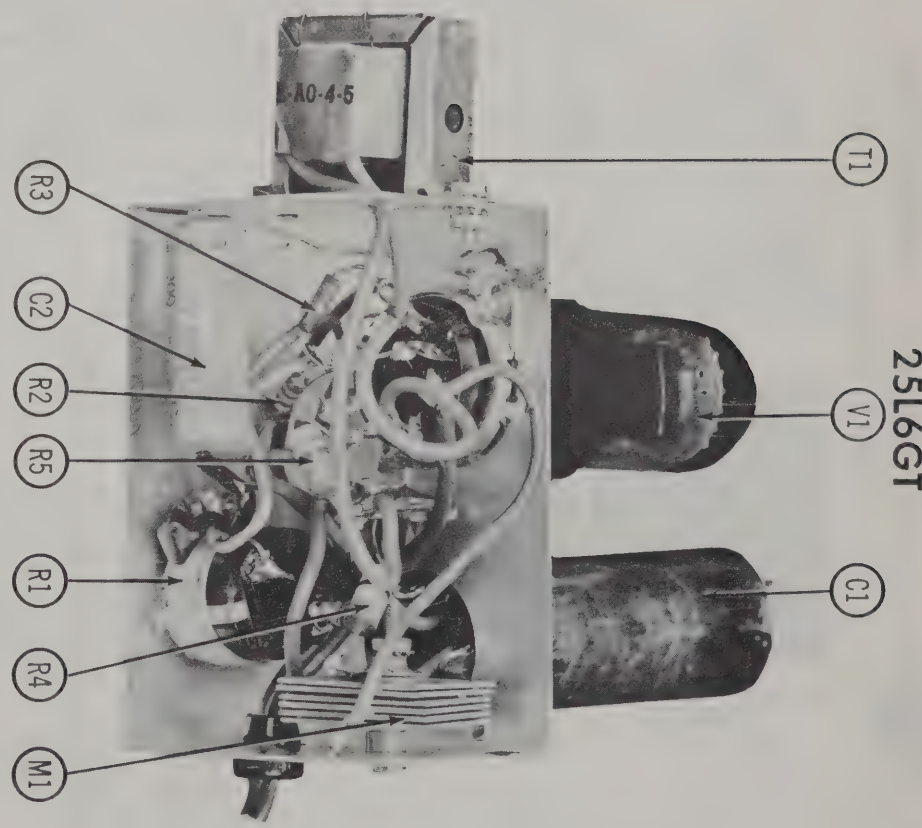
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	MITCHELL PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.052ADC		1263A	RS65	6S65	8J1	65	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	MITCHELL PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2		16L3		60 *2400		* Complete tone arm and cartridge assembly

CHASSIS—BOTTOM VIEW



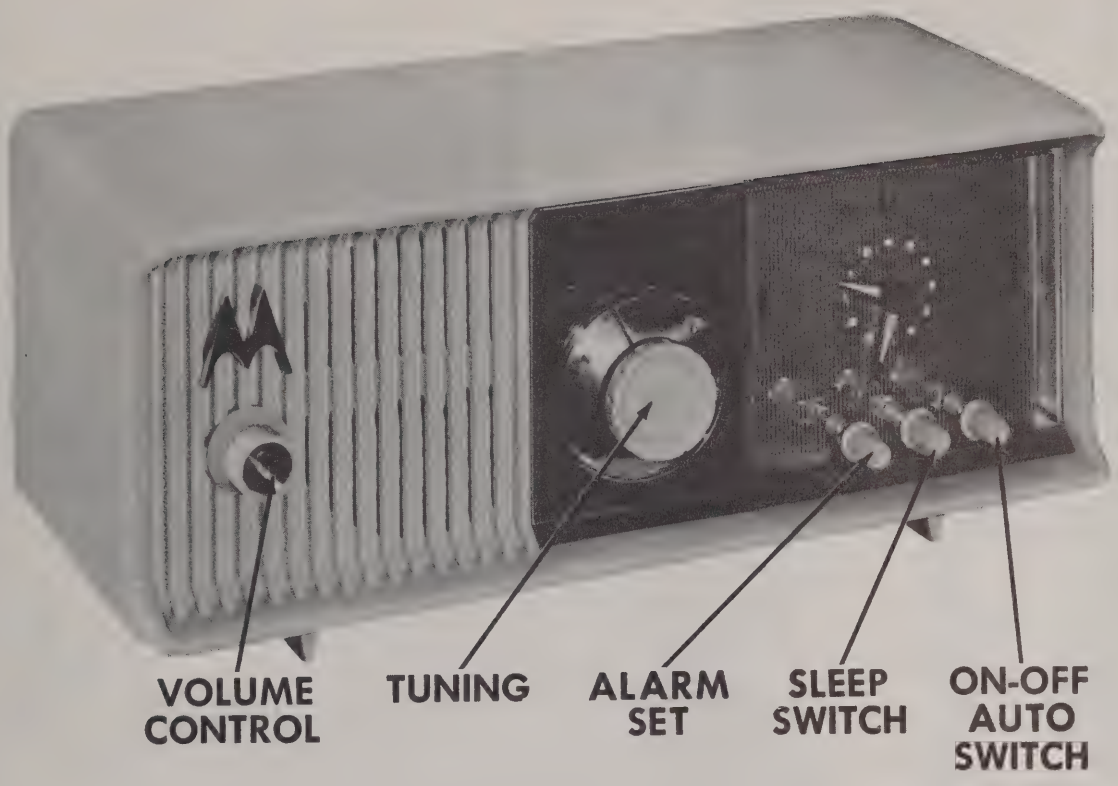
25L6GT

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	MITCHELL PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M3		*J-752 or *J-152		†WS-400-2 or *WA400-2 or ♦W-400AGD	* Metal † Jewel ♦ Diamond

MOTOROLA MODELS 56CC1, 2, 56CD1, 2, 3, 4 (Ch. HS-457)



MOTOROLA MODELS 56CC1, 2, 56CD1, 2, 3, 4 (Ch. HS-457)

TRADE NAME	Motorola Models 56CC1, 56CC2, 56CD1, 56CD2, 56CD3, 56CD4 (Ch. HS-457)
MANUFACTURER	Motorola, Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535KC-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to outer chassis edges.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

L. F. [illegible] CO
39 [illegible] ST.
DENVER, COLORADO

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PARTS LIST AND DESCRIPTIONS

MOTOROLA
MODEL 56CC1 (Ch. HS-457)

PARTS LIST AND DESCRIPTIONS (Continued)

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA		NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT	
V1	Converter	12BE6	12BE6	
V2	IF Amplifier	12BA6	12BA6	
V3	Det.-AVC-AF Amplifier	12AV6	12AV6	
V4	Output	50C5	50C5	
V5	Rectifier	35W4	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■50	150	23B632015	AFH2-15	B015	FP213	TMD12	D-065	TVL-2432
B	▲30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	200	8B120842	BPD-05	DF-503			PTS415	2SE-S5	
C3	5000		21R121165	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C4A	220									
B	5000									
C	5000		♦21B630180		†♦PC-158					
D	250									
E										
C5	.02	200	8K122896	BPD-02	DD-203		817-02	PTS412	2SE-S2	
C6	.047	400	8K490232	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	

♦ Items C4A, C4B, C4C, C4D, C4E, R7A, R7B and R7C are combined in one unit.
When replacing items separately, C4D and C4E should total 250MMF.
† Reverse leads #5 and #6.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1Meg	½	18B633690					Volume - tapped @ 275KΩ

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R2	22KΩ	½	6R6028	BTS-22K	
R3	3.3Meg	½	6R2118	BTS-3.3Meg	
R4	100Ω	½	6R6326	BTS-100	
R5	3.3Meg	½	6R2118	BTS-3.3Meg	
R6	33KΩ	½	6R6012	BTS-33K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R7A	6.8Meg			BTS-6.8Meg	
B	470KΩ		♦21B630180	BTS-470K	
C	470KΩ			BTS-470K	
R8	150Ω	½	6R3992	BTS-150	
R9	1000Ω	1	6K119404	BTA-1000	
R10	27Ω	½	6R5683	BTS-27	

♦ Items R7A, R7B, R7C, C4A, C4B, C4C, C4D, C4E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.5KΩ	3-4Ω	25B633669-O	Z1101 ①	A-3025①	A-3332 ①		S-12X ①	① Use original channel

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	RCA TYPE No.	
SP1	4"	PM	3 - 4 Ω	50C633685	4A07	223S1	

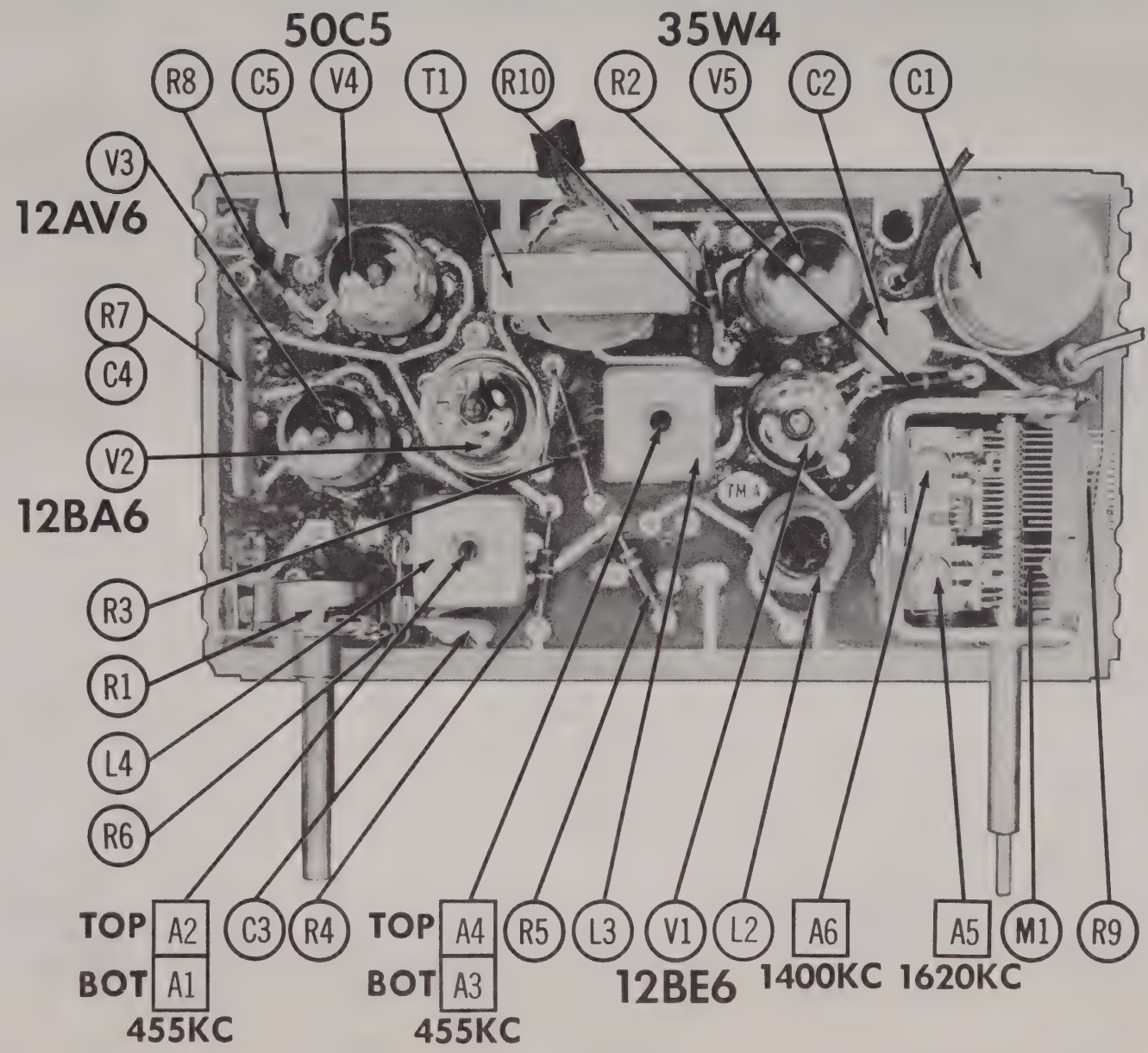
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.5Ω		1V634140 *				Includes cabinet back-56CC series
L2	Osc. Coil	1.1Ω	13Ω	24B631990				
L3	Input IF	15Ω		24K632782				
L4	Output IF	14Ω	14Ω	24K632039	16-6780		13-PC2	

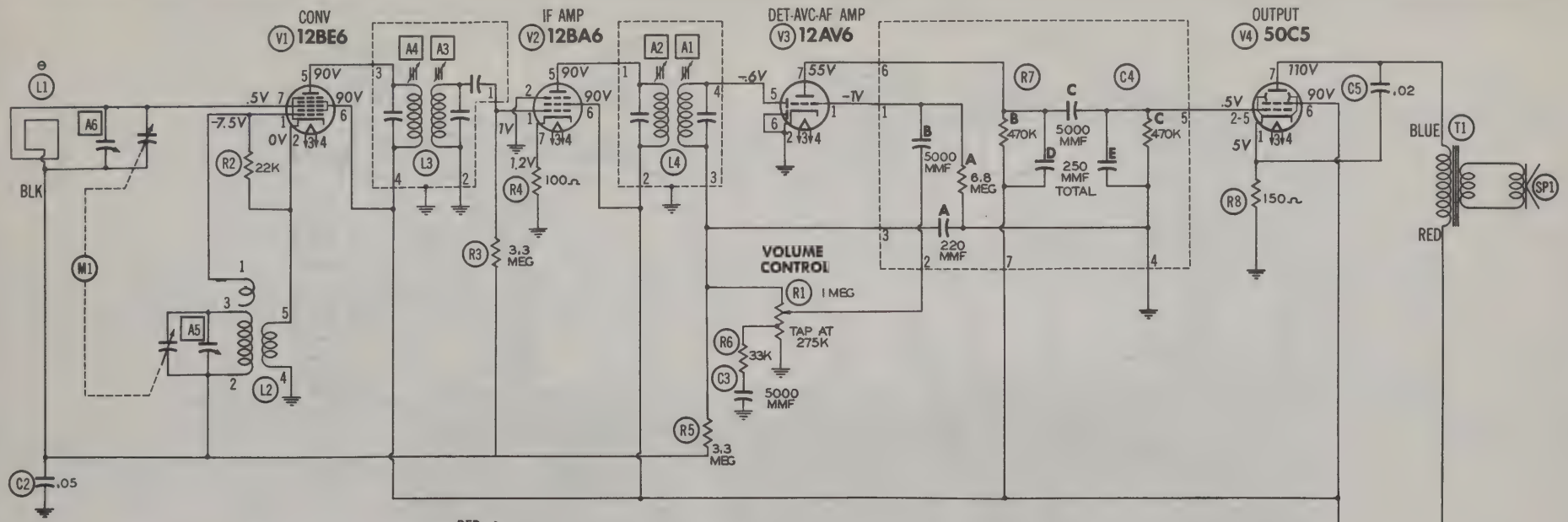
* Part number 1V634130 used in 56CD series.

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Tuning Cap.	19C633694	2 Gang
M2	Clock	72D633657	Models 56CC1, 56CC2
	Clock	72D633664	Models 56CD1, 56CD2, 56CD3, 56CD4
	Cabinet	1V635155	Model 56CC2
	Cabinet	1V635189	Model 56CD1
	Cabinet	1V635190	Model 56CD3
	Cabinet	1V635191	Model 56CD4
	Cabinet	1V635154	Models 56CC1, 56CD2
	Knob	36K633676	Tuning - Models 56CC1, 56CD2
	Knob	36K633679	Tuning - Model 56CC2
	Knob	36C633675	Tuning - Model 56CD1
	Knob	36K633677	Tuning - Model 56CD3
	Knob	36K633678	Tuning - Model 56CD4
	Knob	36K633681	Volume - Models 56CC1, 56CD2
	Knob	36K633684	Volume - Model 56CC2
	Knob	36K633680	Volume - Model 56CD1
	Knob	36K633682	Volume - Model 56CD3
	Knob	36K633683	Volume - Model 56CD4
	Knob	36K634306	Clock (3 used)
	Knob	36C633661	Pointer
	Crystal	61C633656	Clock
	Dial Scale	13C633660	

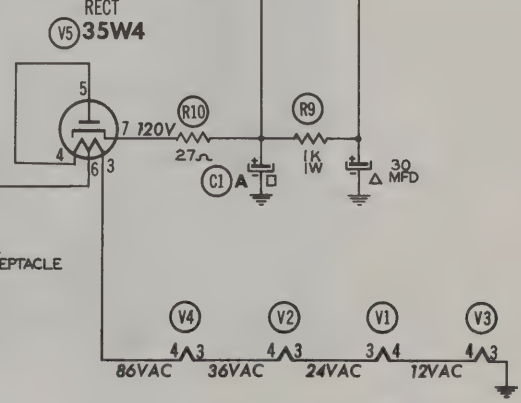


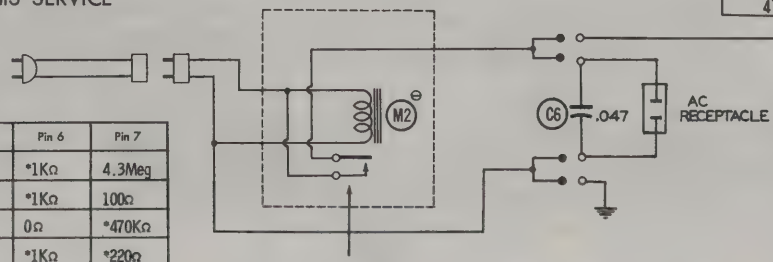
CHASSIS TOP VIEW



OSC. COIL CONNECTIONS

⏚ DENOTES B-BUSS ON PRINTED CIRCUIT BOARD





THROUGH CAMS AND LINKAGES, ONE SW. PERFORMS ALL FUNCTIONS OF OFF, ON, AUTO, AND SLEEP

IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	24Ω	12Ω	*1KΩ	*1KΩ	4.3Meg
V 2	12BA6	7.6Meg	0Ω	24Ω	36Ω	*1KΩ	*1KΩ	100Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	1Meg	0Ω	*470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	86Ω	470KΩ	*1KΩ	*220Ω
V 5	35W4	NC	NC	86Ω	117Ω	117Ω	115Ω	15KΩ

* MEASURED FROM PIN 7 OF V5.
NC- NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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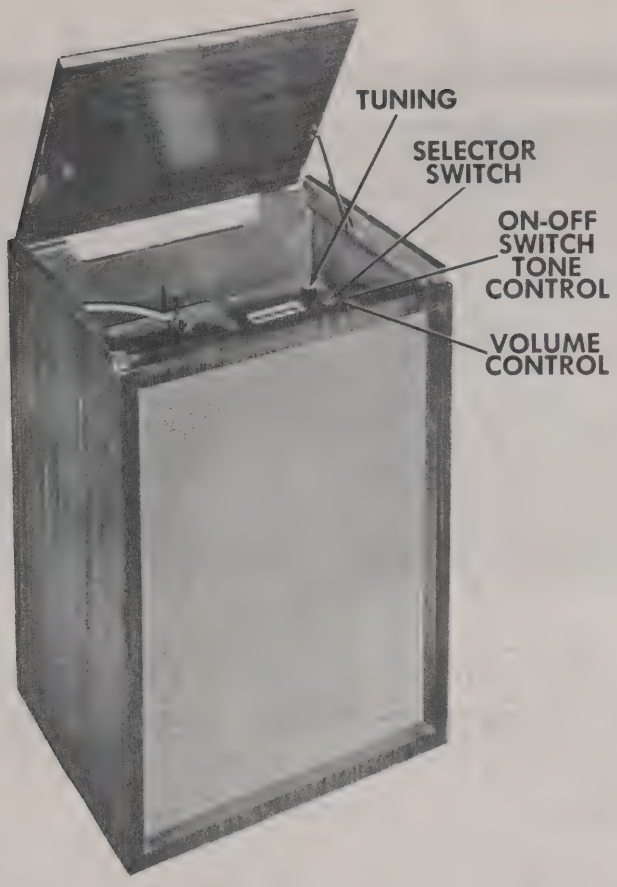
OLYMPIC
MODEL 574



OLYMPIC
MODEL 574

TRADE NAME	Olympic Model 574
MANUFACTURER	Olympic Radio & Tel. Corp., 34-01 38th Ave., Long Island City 1, N. Y.
TYPE SET	AC Operated AM Superheterodyne Receiver with 3 Speed Automatic Record Changer
TUBES (Five)	Types 12SA7GT Converter, 12SK7GT IF Amplifier, 12SQ7 Det.-AVC-AF Amp., 50L6GT Output, 35Z5GT Rectifier.
POWER SUPPLY	105-120 Volts AC-60 Cycles
RATING	.27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna lug on tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop (Radiated)	1500KC	Tune to 1500KC signal	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT—SEE SIMILAR CRESCENT 500 SERIES—PHOTOFACT SET #197—FOLDER #4—OR RECORD CHANGER MANUAL CM-5.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	NOTES
V1	Converter	12SA7GT	12SA7GT	
V2	IF Amplifier	12SK7GT	12SK7GT	
V3	Det. -AVC-AF Amp.	12SQ7	12SQ7	
V4	Output	50L6GT	50L6GT	
V5	Rectifier	35Z5GT	35Z5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■ 60	150	C0-2820	AFH3-13	C012	FP216. 6	TM-D80-150	T-055	R1534 *
B	▲ 80	150							
C2	10	25	C0-1133	PRS25V10	BR102	TC22	TD-10-25	FM-0210	TVA-1204

* Unit must be ordered from manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	.01	600	C0-H-6103	BPD-01	D6-103	CUB6S1	GP3-333-103	PT611	6TM-S1	
C4	.02	600	C0-H-6203	BPD-02	DD-203	CUB6S2	817-02	PT612	6TM-S2	
C5A	150		† PC-2478	† PA-98	† PC-51	† 111TM2	† 1403-02	UC-5315	† D-2	
B	150							UC-5315		
C6	.1	400	C0-H-4104	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C7	47			SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	Note 1
C8A	220									
B	2000									
C	5000		♦ PC-2477	♦ PA-113-1	♦ PC-150	♦ 116TM1	♦ 1408-01		♦ DT-1	
D	250									
E										
C9	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C10	.005	600	C0-H-6502	SI5000	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C11	.005	600	C0-H-6502	SI5000	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	Note 2
C12	.047	400	C0-B-4503	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C13	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	

Note 1. Not used in some versions.
Note 2. Some versions use .01MFD in this application.
† Items C5A, C5B and R5 are combined in one unit.
♦ Items C8A, C8B, C8C, C8D, C8E, R8A, R8B and R8C are combined in one unit. When replacing items separately, C8D and C8E should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2Meg	½	PT-567	ABT-80	A47F6-2Meg	Q13-139X	UT-449	Volume tap at 600KΩ
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R1A.
R2A	3Meg	½	PT-2160	AB-85	A47-3Meg-Z	Q13-140	U-57	Tone
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R2A.
C	Switch		Not Req.	KB-3	SWE-21	76-1	US-28	Attach to R2A.

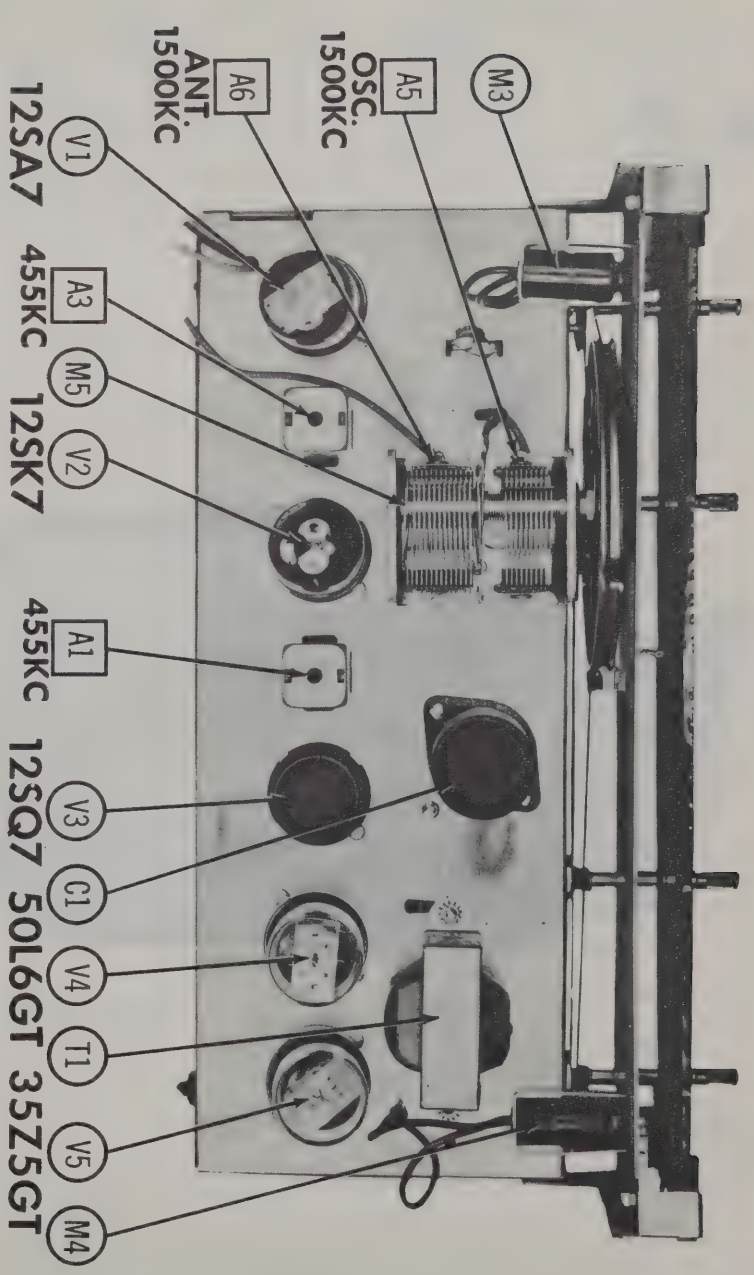
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R3	22KΩ	½	REB223M	BTS-22K	
R4	2.2Meg	½	REB225M	BTS-2.2Meg	
R5	47KΩ	½	† PC-2478	BTS-47K	
R6	1Meg	½	REB105M	BTS-1Meg	
R7	470KΩ	½	REB474M	BTS-470K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R8A	6.8Meg		♦ PC-2477	BTS-6.8Meg	
B	470KΩ			BTS-470K	
C	470KΩ			BTS-470K	
R9	1000Ω	2	RED102M	BTB-1000	
R10	150Ω	½	REB151K	BTS-150	
R11	330Ω	2	RED331M	BTB-330	
R12	220KΩ	½	REB224M	BTS-220K	Note 1

Note 1. Not used in some versions.
† Items R5, C5A, C5B are combined in one unit.
♦ Items R8A, R8B, R8C, C8A, C8B, C8C, C8D, C8E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2.4KΩ	3Ω	TR2690-1	Z1103 ①	A-3031 ①	A-3330 ①	24S50A①	S-16X ①	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA: OLYMPIC PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	8"	PM	3Ω	SK1906-2 SK3891 ①	8A21 8A21	234S1 234S1	① Used as an alternate.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: OLYMPIC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Loop Ant.	.3Ω	3Ω	LP2687				
L2	Osc. Coil	.3Ω	6Ω	CL2709	14-1073		69-Osc. *	
L3	Input IF	15Ω	15Ω	TR1644	16-6758	BC-352	12-C1	
L4	Output IF	15Ω	15Ω	TR1644	16-6758	BC-353	12-C2	
L5	RF Choke	0Ω						12 turns #20 covered wire wound on .1MFD

* Drill mounting hole.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: OLYMPIC PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1		66-2	K-AG			

ASTATIC NEEDLE LISTING SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

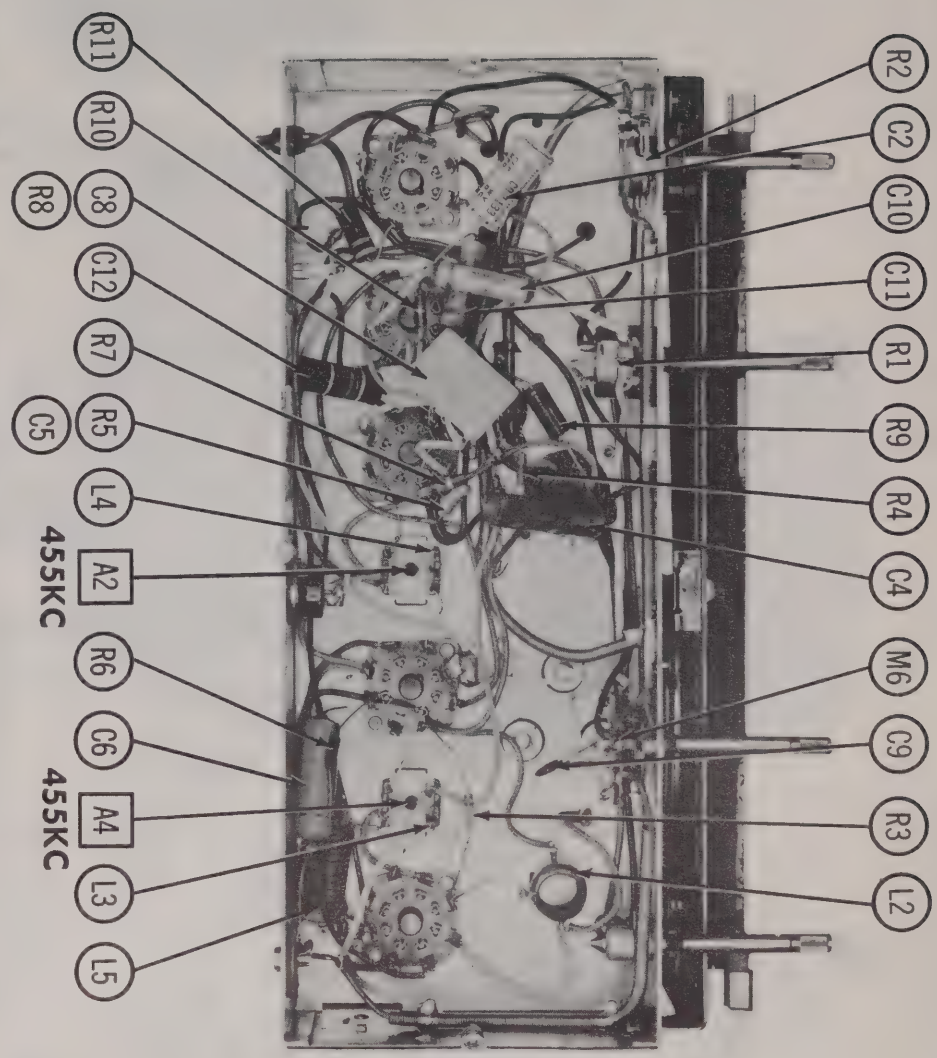
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

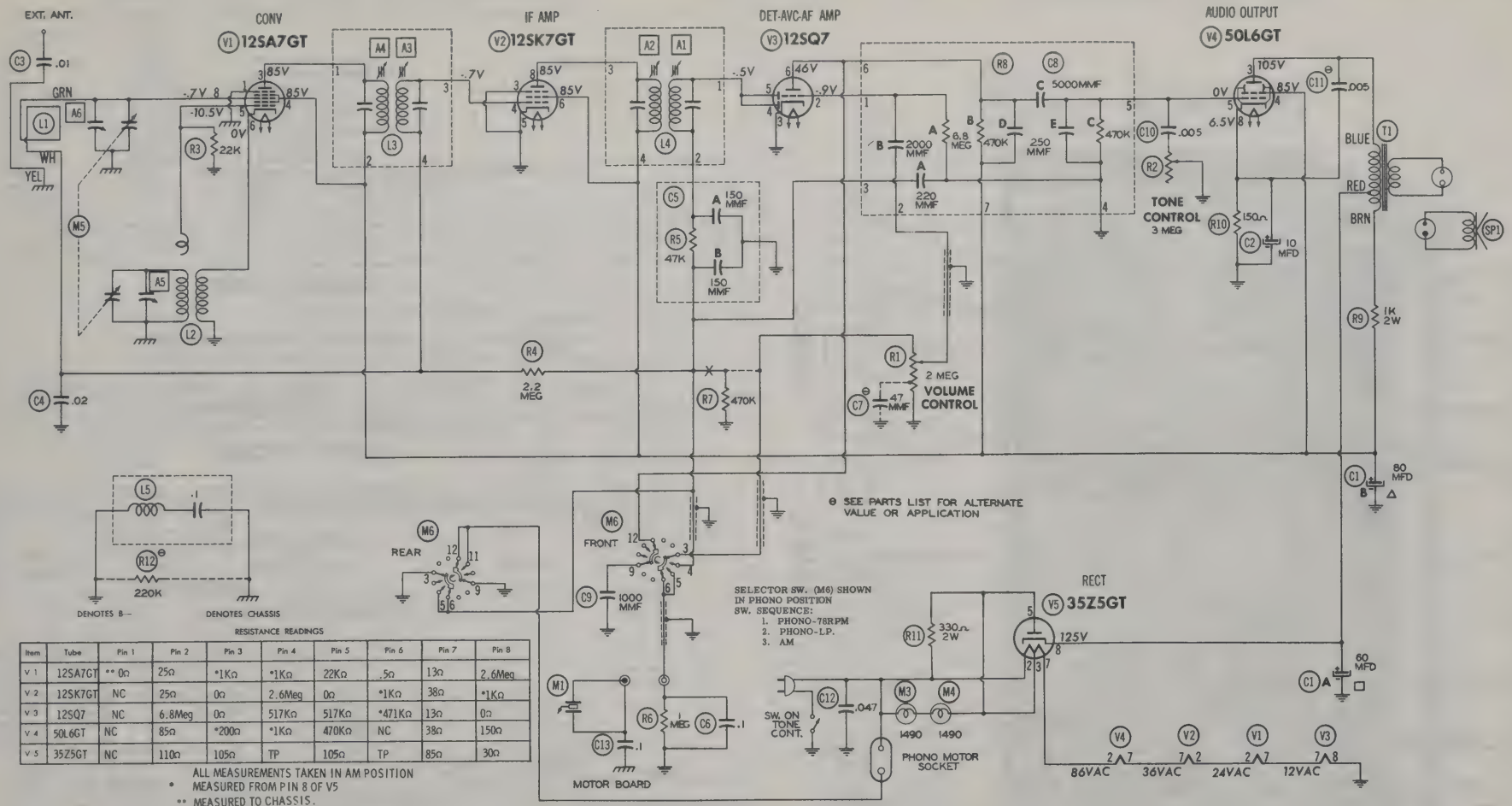
ITEM No.	REPLACEMENT DATA: OLYMPIC PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M2		* A-762 or † A-672 or ♦ A-672D		* W-39AGA	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M3	Pilot Light		#1490
M4	Pilot Light		#1490
M5	Tuning Cap.	CV2681	2 Gang (24-447MMF, 30-195MMF)
M6	Switch	SW437	Radio-Phono (4 Pole-3 Position, Rotary, Wafer Type)
	Knob	KN3869	Volume, Mahogany
	Knob	KN3869-1	Volume, Tan
	Knob	KN3875	On-Off-Tone, Mahogany
	Knob	KN3875-1	On-Off-Tone, Tan
	Knob	KN3870	Tuning, Mahogany
	Knob	KN3870-1	Tuning, Tan
	Knob	KN4186	Radio-Phono, Mahogany
	Knob	KN4186-1	Radio-Phono, Tan
	Dial Glass	DL3154	
	Dial Pointer	PO1011	
	Dial Backplate	MS965-1	

CHASSIS—BOTTOM VIEW

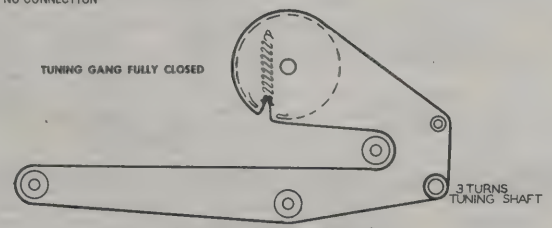




RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	** 0Ω	25Ω	*1KΩ	*1KΩ	22KΩ	.5Ω	13Ω	2.6Meg
V 2	12SK7GT	NC	25Ω	0Ω	2.6Meg	0Ω	*1KΩ	38Ω	*1KΩ
V 3	12SQ7	NC	6.8Meg	0Ω	517KΩ	517KΩ	*471KΩ	13Ω	0Ω
V 4	50L6GT	NC	85Ω	*200Ω	*1KΩ	470KΩ	NC	38Ω	150Ω
V 5	35Z5GT	NC	110Ω	105Ω	TP	105Ω	TP	85Ω	30Ω

ALL MEASUREMENTS TAKEN IN AM POSITION
* MEASURED FROM PIN 8 OF V5
** MEASURED TO CHASSIS.
TP - TIE POINT
NC - NO CONNECTION



DIAL CORD STRINGING

IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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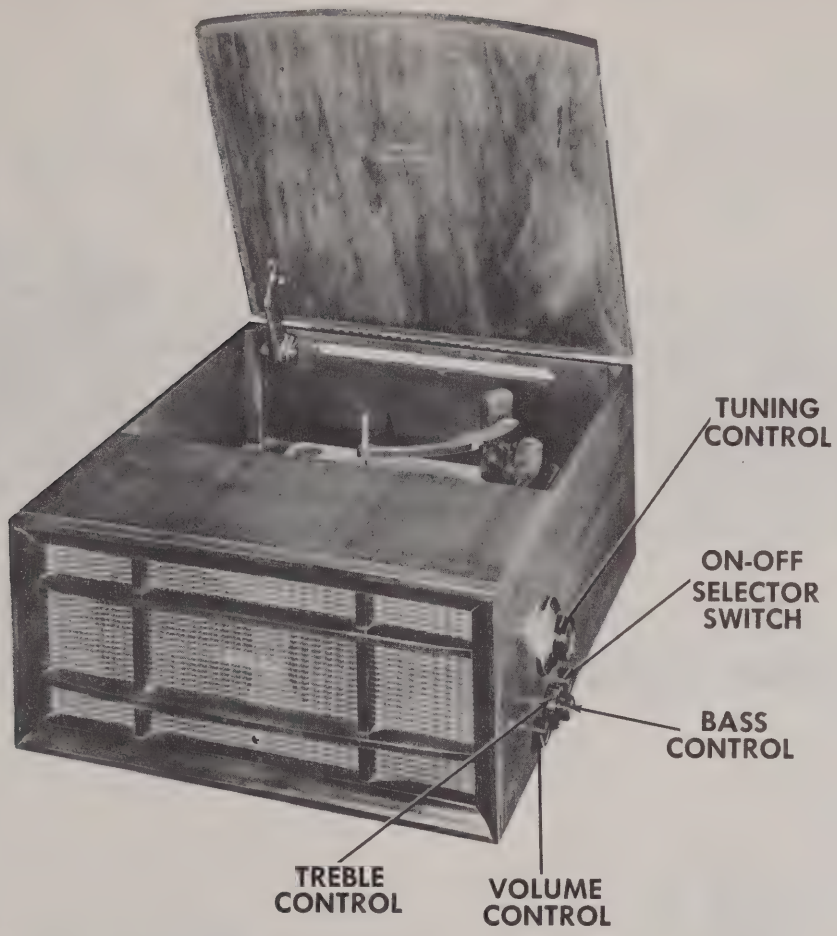
SENTINEL
MODEL 1U-367, 1U-368

SENTINEL
MODEL 1U-367, 1U-368



SENTINEL
MODEL 1U-367, 1U-368

TRADE NAME	Sentinel Models 1U-367, 1U-368
MANUFACTURER	Sentinel Radio Corp., 2100 W. Dempster, Evanston, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver With 3 Speed Automatic Record Changer
TUBES (Seven)	Types 6BE6 Conv., 6BA6 IF Amp., 6AV6 Det.-AVC-1st. AF Amp., 12AU7A (or) 12AU7 2nd. AF Amp.-Phase Inv., (2) 6AQ5 Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .57 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.02MFD	High side to antenna lug on tuning gang. Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FOR SERVICE INFORMATION ON RECORD CHANGER SEE SIMILAR COLLARO MODEL RC54 - PHOTOFACT SET #285-FOLDER 6.

L. F. BLANKENSHIP
3924 MEADE ST
DENVER, COLORADO

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

SENTINEL
MODEL IU-367

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA		NOTES
		SENTINEL PART No.	STANDARD REPLACEMENT	
V1	Converter	6BE6	6BE6	
V2	IF Amplifier	6BA6	6BA6	
V3	Det.-AVC-1st. AF Amplifier	6AV6	6AV6	
V4	2nd. AF Amplifier-Phase Inverter	12AU7A	12AU7A	12AU7 may be used as an alternate
V5	Output	6AQ5	6AQ5	
V6	Output	6AQ5	6AQ5	
V7	Rectifier	5Y3GT	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SENTINEL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	30	350	25E80	AFH3-32	BBRD3345	TCT3764	TMD52	FMD-4530	TVA-2735
B	30	350			BR1235		TD-12-350	MT-4510	TVA-1604
C	10	350							
C2	50	15	25E81	PRS25V50	BR502	TC29	TD-50-25	FM-0250	TVA-1206

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

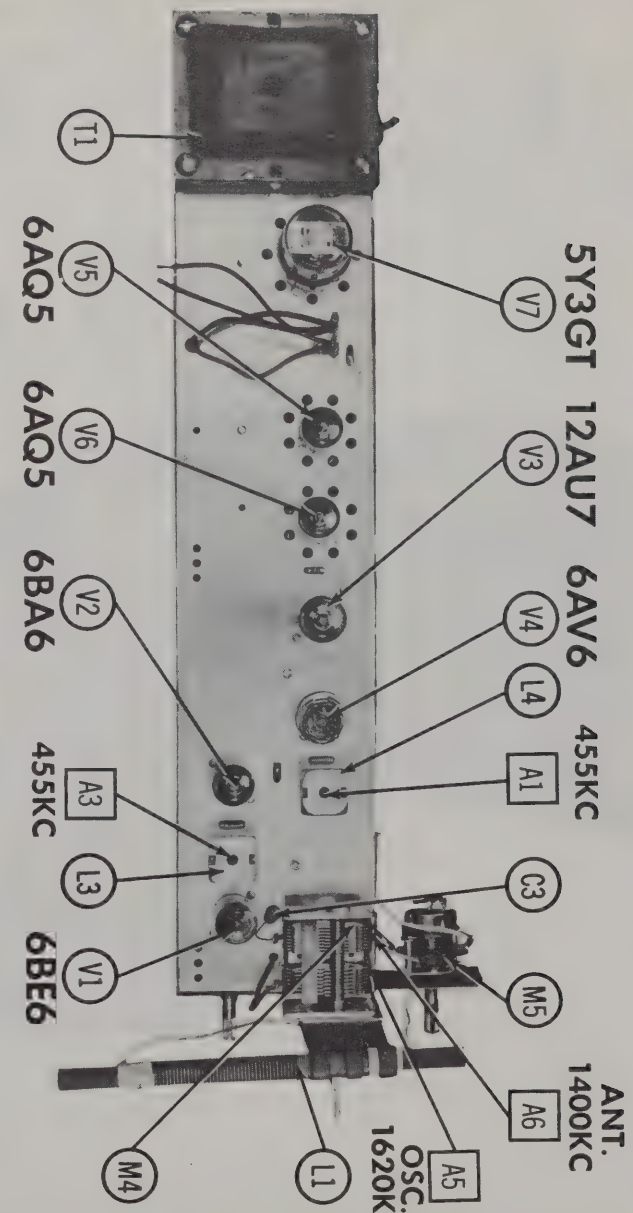
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	200		23E4000-29	NP0-SI200	TCZ-200	TZ37	NP0K-201	MCB-237	5GA-T2	
C4	.047	200	23E3214	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C5	30		†23E2022-4	NP0-SI30	TCZ-30	TZ17	NP0L-300	ZT-5433		
C6	.1	400	23E3416	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C7A	100		♦23E2022	♦PA-97-1	♦PC-50	♦111TM1	♦1403-01	MCB235	♦D-1	
B	100							MCB235		
C8	.047	200	23E3214	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C9	470		23E4004-1	BPD-00047	DD-471	K060	811-471	UC-5347	5GA-T47	
C10	100		23E4000-17	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C11	.0022	400	23E3406	SI2200	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C12	10000		23E4004-17	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C13	20000		23E4004-19	BPD-02	DD-203	K085	817-02	PT412	5HK-S2	
C14	.1	200	23E2043-9	P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C15	.047	200	23E3214	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C16	100		23E4000-17	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C17	5000		23E4004-15	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C18	.047	400	23E3414	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C19	.01	400	23E3410	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C20	100		23E4000-17	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C21	.033	400	23E3413	BPD-03	DF-303	CUB6S33		PT4133	6TM-S33	
C22	.033	400	23E3413	BPD-03	DF-303	CUB6S33		PT4133	6TM-S33	
C23	470		23E4004-1	BPD-00047	DD-471	K060	811-471	UC-5347	5GA-T47	
C24	470		23E4004-1	BPD-00047	DD-471	K060	811-471	UC-5347	5GA-T47	
C25	1.0	100	23E2043	P288N-1.0		CUB2W1		PT41	2TM-M1	
C26	20000		23E4004-19	BPD-02	DD-203	K085	817-02	PT612	5HK-S2	
C27	.1	400	23E3416	P488N-1	DF-104	CUB2P1		PT401	4TM-P1	
C28	10000	2000							20HKB-S1	
C29	.0022	400	23E3406	SI2200	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	

† Items C5 and R5 are combined in one unit.
♦ Items C7A, C7B and R9 are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SENTINEL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1Meg	½	28E115					Volume - taps @ 100KΩ & 200KΩ
R2A	1Meg	½	28E158					Treble (Panel)
B	1Meg	½						Bass (Center)
C	1Meg	½						Bass (Rear)

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SENTINEL PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R3	47Ω	½	27E470K-½	BTS-47	
R4	1Meg	½	27E105M-½	BTS-1Meg	
R5	22KΩ	½	†23E2022-4	BTS-22K	
R6	18KΩ	1	27E183K-1	BTA-18K	
R7	1Meg	½	27E105M-½	BTS-1Meg	
R8	220KΩ	½	27E224M-½	BTS-220K	
R9	47KΩ	½	♦23E2022	BTS-47K	
R10	47Ω	½	27E470K-½	BTS-47	
R11	15KΩ	½	27E153K-½	BTS-15K	
R12	15KΩ	½	27E153K-½	BTS-15K	
R13	4.7Meg	½	27E475M-½	BTS-4.7Meg	
R14	220KΩ	½	27E224M-½	BTS-220K	
R15	100KΩ	½	27E104M-½	BTS-100K	
R16	220KΩ	½	27E224M-½	BTS-220K	
R17	3300Ω 5%	½	27E332K-½	BTS-3300 5%	
R18	220KΩ	½	27E224M-½	BTS-220K	
R19	22KΩ	½	27E223K-½	BTS-22K	
R20	22KΩ	½	27E223K-½	BTS-22K	
R21	470KΩ	½	27E474M-½	BTS-470K	
R22	470KΩ	½	27E474M-½	BTS-470K	
R23	220Ω	1	27E221K-1	BTA-220	
R24	22KΩ	½	27E223K-½	BTS-22K	
R25	2200Ω	1	27E222K-1	BTA-2200	
R26	4700Ω	1	27E472K-1	BTA-4700	

† Items R5, C5 are combined in one unit.
♦ Items R9, C7A, C7B are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SENTINEL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .57A	525VCT @ .078A	5VAC @ 2A	6.3VAC @ 2.2A	22E96	P9207	P3052 ①	PM8404①		R-10B ①

① Tape 6.3VCT.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SENTINEL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7.8KΩ	6-8Ω	22E112	Z1101	A-2905①	A-3870	22S58	S-55X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA SENTINEL PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	8"	PM	6 - 8Ω	1E34-5 ①	8A6Z6	208S4	① Used in Model 1U-367
	15"	PM		1E68 ②			② Used in Model 1U-368
SP2	4"	PM	12Ω	1E66 ③	4A07T		③ Used in Models 1U-367, 1U-368

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SENTINEL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coil	.7Ω		64E36-4				
L2	Osc. Coil	1.3Ω	10Ω	20E938	14-1074	BC-394	70-OSC	
L3	Input IF	15Ω	15Ω	20E732	16-6758	BC-352	12-C1	
L4	Output IF	10Ω	10Ω	20E763	16-6758	BC-353	12-C2	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA SENTINEL PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1		55-T	GD-J	47	0-1 or S-1 & 0-3	

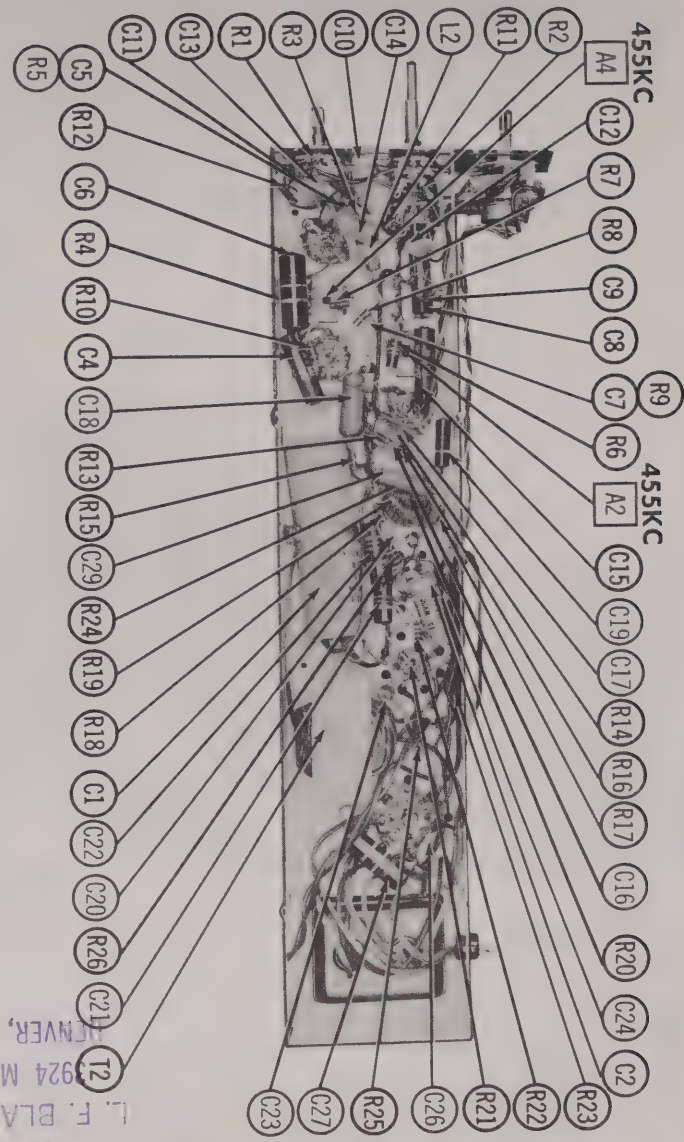
ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA SENTINEL PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M2		*JP-36 or †JPS-36 or ♦†JPS-36SD	*AC-498	*W-33TPA or †W-33TPS or ♦†W-33DS or ♦W-33TPD	* Metal † Jewel ♦ Diamond

CHASSIS—BOTTOM VIEW



MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M3	Pilot Light	40E1	#47
M4	Tuning Cap.	24E73	2 Gang (13-235MMF, 13-105MMF)
M5A	Switch	29E39	Off (SPST)
B	Switch		Radio-phono (Rotary-wafer type)

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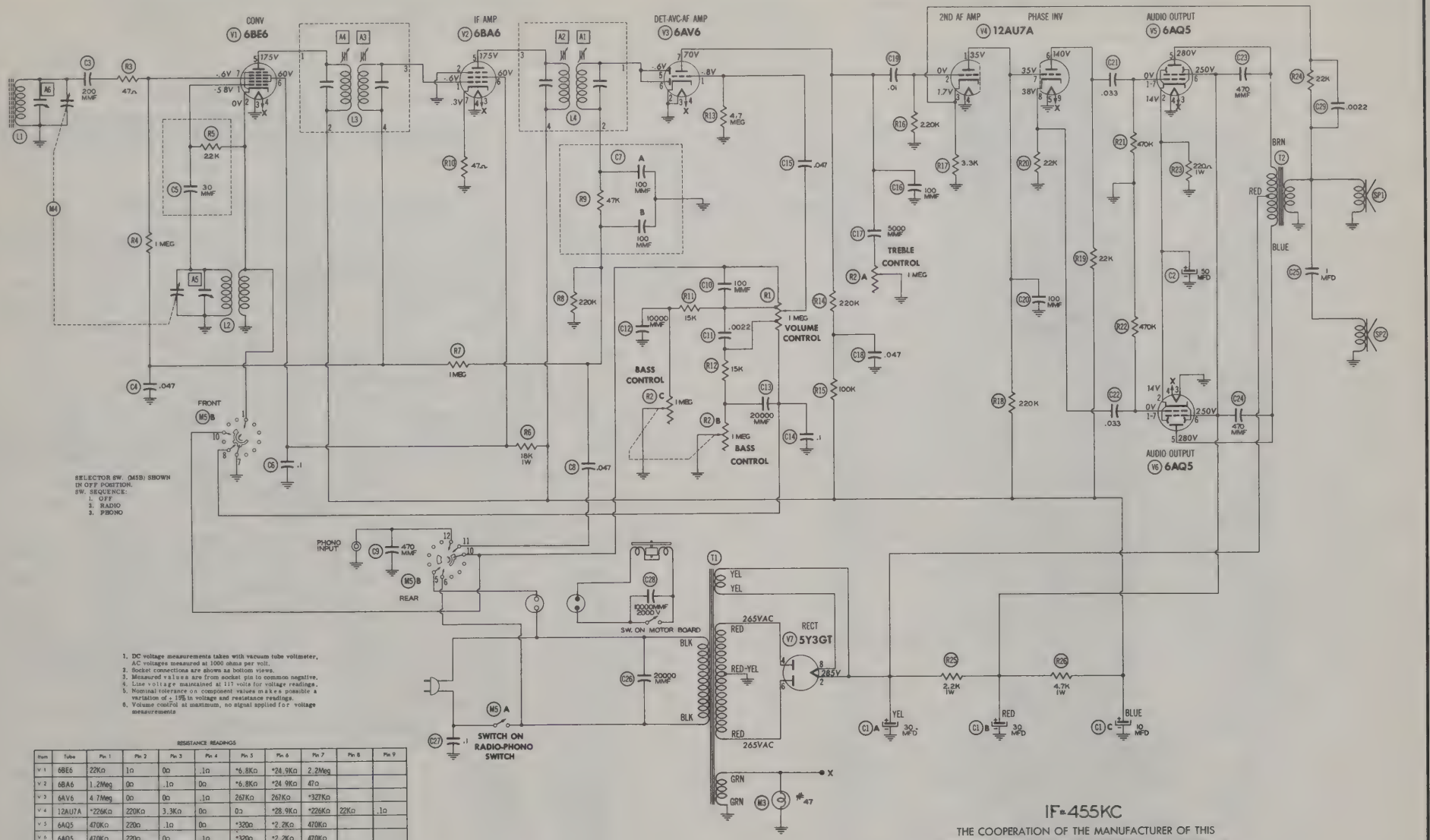
L. F. BLANKENSHIP
PROPERTY OF



1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BE6	22KΩ	1Ω	0Ω	.1Ω	*6.8KΩ	*24.9KΩ	2.2Meg		
V 2	6BA6	1.2Meg	0Ω	.1Ω	0Ω	*6.8KΩ	*24.9KΩ	47Ω		
V 3	6AV6	4.7Meg	0Ω	0Ω	.1Ω	267KΩ	267KΩ	*327KΩ		
V 4	12AU7A	*226KΩ	220KΩ	3.3KΩ	0Ω	0Ω	*28.9KΩ	*226KΩ	22KΩ	.1Ω
V 5	6AQ5	470KΩ	220Ω	.1Ω	0Ω	*320Ω	*2.2KΩ	470KΩ		
V 6	6AQ5	470KΩ	220Ω	0Ω	1Ω	*320Ω	*2.2KΩ	470KΩ		
V 7	5Y3GT	NC	70KΩ	TP	90Ω	TP	90Ω	TP	70KΩ	

ALL MEASUREMENTS TAKEN IN RADIO POSITION
* MEASURED FROM PIN 2 OF V7
NC - NO CONNECTION
TP - TIE POINT

IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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STEELMAN
MODEL 3RP6

PROPERTY OF
L. F. ANKENSHIP
3021 MEADE ST.
DENVER, COLORADO

STEELMAN
MODEL 3RP6

TRADE NAME	Steelman Model 3RP6
MANUFACTURER	Steelman Phono & Radio Co., Inc., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated AM Superheterodyne Receiver With 3 Speed Manual Record Player
TUBES (Four)	Types 12AU6 Converter, 12AT6 Det.-AF Amplifier, 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .22 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535KC-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting . Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (grid) of 12AU6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A4	"

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PARTS LIST AND DESCRIPTIONS

STEELMAN MODEL 3RP6

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA		NOTES
		STEELMAN PART No.	STANDARD REPLACEMENT	
V1	Converter	12AU6	12AU6	
V2	Det.-AF Amplifier	12AT6	12AT6	
V3	Output	50C5	50C5	
V4	Rectifier	35W4	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150		PRS150V4040-20	BBRT44215	TCT3116	TDL-404020-150	FMT-315	TVA-3448
B	40	150							
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10									
C3	47			SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C4A	220									
B	5000									
C	5000		♦	♦PA-113-2	♦PC-151	♦116TM2	♦1408-02		♦DT-2	
D	250									
E										
C5	.01	600		BPD-01	D6-103	CUB6S1	GP3-333-103	PT611	6TM-S1	
C6	.05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C7	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	

♦ Items C4A, C4B, C4C, C4D, C4E, R6A, R6B, R6C are combined in one unit. When replacing items separately, C4D and C4E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½		AB-70	A47-1Meg-Z	Q13-137	U-53	Volume
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch			KB-1	SWE-12	76-1	US-26	Attach to R1A

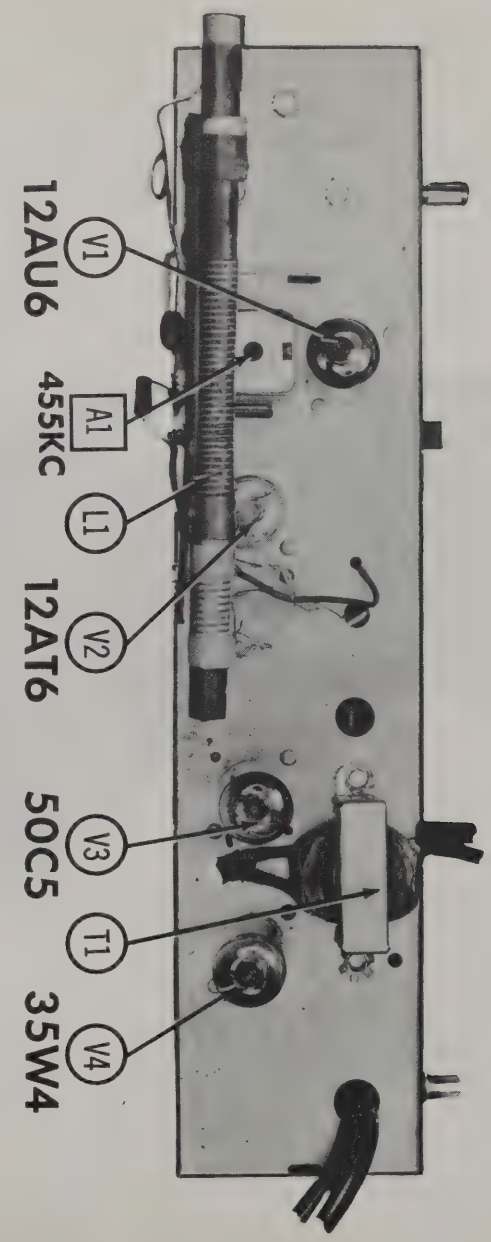
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	STEELMAN PART No.	IRC PART No.	
R2	2.2Meg	½		BTS-2.2Meg	
R3	22KΩ	½		BTS-22K	
R4	470KΩ	½		BTS-470K	
R5	220KΩ	½		BTS-220K	
R6A	6.8Meg			BTS-6.8Meg	
B	470KΩ		♦	BTS-470K	
C	470KΩ			BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	STEELMAN PART No.	IRC PART No.	
R7	100Ω	½		BTS-100	
R8	180Ω	½		BTS-180	
R9	2200Ω	½		BTS-2200	
R10	22Ω	1		BTA-22	
R11	22Ω	1		BTA-22	

♦ Items R6A, R6B, R6C, C4A, C4B, C4C, C4D, C4E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2.65KΩ	3-4Ω	TR-120	Z1101	A-3025	A-3332	22S45	S-12X	

SPEAKER

ITEM No.	RATINGS SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: STEELMAN PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	4"	PM	3-4Ω	SP-102-1	4A07	223S1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: STEELMAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coil	.8Ω						Tapped @ .2Ω
L2	Osc. Coil	1.6Ω	8.7Ω					Tertiary winding-2.5Ω
L3	IF Trans.	28Ω *	28Ω	LF-57				* Tapped @ 1Ω

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: STEELMAN PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1		106 *P-106	N6-2	*24H60		* Complete tone arm and cartridge assy.

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED . FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

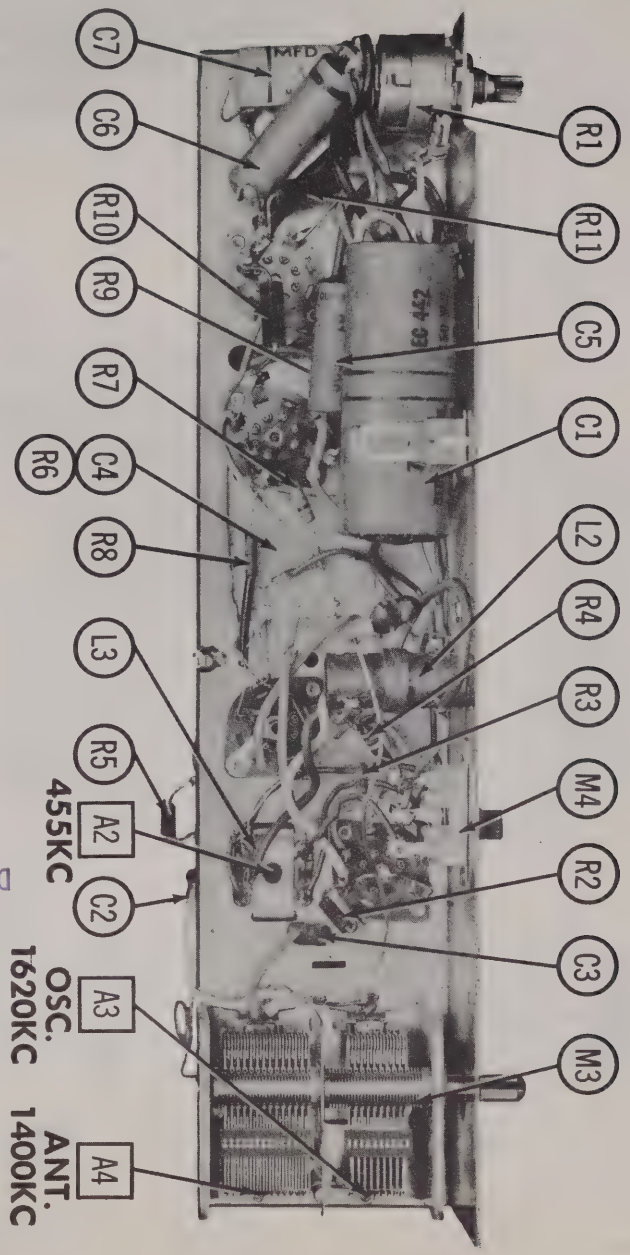
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: STEELMAN PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M2		*W-122			* Metal

MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M3	Tuning Cap.	CV62-1	2 Gang (27-485MMF, 23-190MMF)
M4	Switch		Radio-Phono (DPDT-Slide type)

CHASSIS—BOTTOM VIEW



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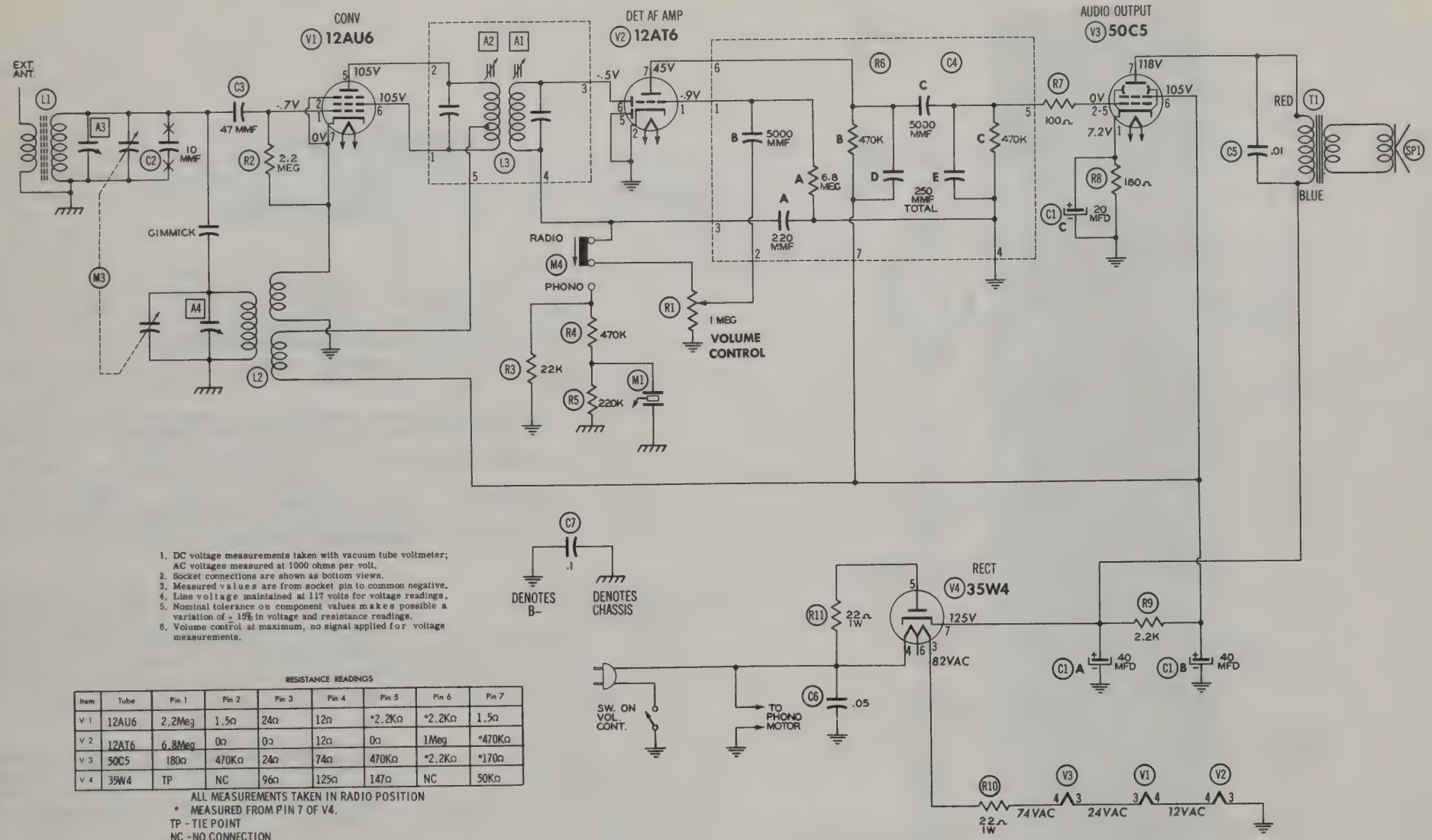
DENVER, COLORADO



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12AU6	2.2Meg	1.5Ω	24Ω	12Ω	*2.2KΩ	*2.2KΩ	1.5Ω
V 2	12AT6	6.8Meg	0Ω	0Ω	12Ω	0Ω	1Meg	*470KΩ
V 3	50C5	180Ω	470KΩ	24Ω	74Ω	470KΩ	*2.2KΩ	*170Ω
V 4	35W4	TP	NC	96Ω	125Ω	147Ω	NC	50KΩ

ALL MEASUREMENTS TAKEN IN RADIO POSITION
* MEASURED FROM PIN 7 OF V4.
TP - TIE POINT
NC - NO CONNECTION

IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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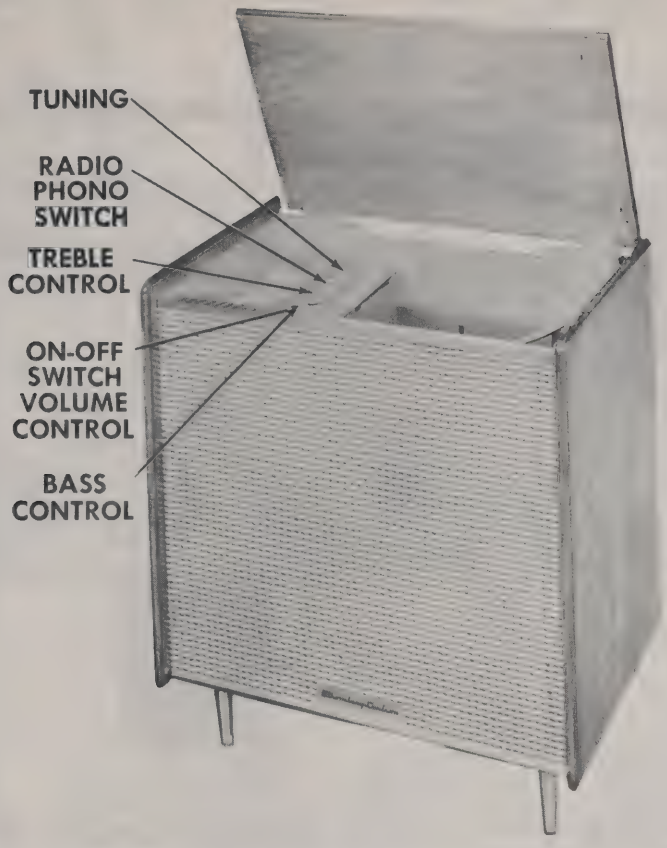

STROMBERG-CARLSON
MODEL HFRP

STROMBERG-CARLSON
MODEL HFRP

TRADE NAME	Stromberg-Carlson Model HFRP
MANUFACTURER	Stromberg-Carlson Co., Service Dept., 1700 University Ave., Rochester 10, N. Y.
TYPE SET	AC Operated AM Superheterodyne Receiver With 4 Speed Automatic Record Changer.
TUBES (Eight)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AV6 Det. -AVC-1st. AF Amp., 12AX7 2nd AF Amp. -Phase Inverter, (2) 6V6GT Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .60 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC -1630KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400~ mod)	Around 1000KC	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	600KC	Tune to 600KC	"		If necessary adjust pointer to 600KC.
3.		"	1400KC	Tune to 1400KC signal.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	600KC	"		Adjust antenna coil on loop stick. (Necessary only if loop stick has been replaced.)
5.		"	1400KC	1400KC	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR V-M MODEL 1200 - PHOTOFACT SET #290-FOLDER 11.

DENVER, COLORADO

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA		NOTES
		Stromberg-Carlson PART No.	STANDARD REPLACEMENT	
V1	RF Amplifier	6BA6	6BA6	
V2	Converter	6BE6	6BE6	
V3	IF Amplifier	6BA6	6BA6	
V4	Det. -AVC-1st. AF Amplifier	6AV6	6AV6	
V5	2nd. AF Amplifier - Phase Inverter	12AX7	12AX7	
V6	Output	6V6GT	6V6GT	
V7	Output	6V6GT	6V6GT	
V8	Rectifier	5Y3GT	5Y3GT	

ELECTROLYTIC CAPACITORS

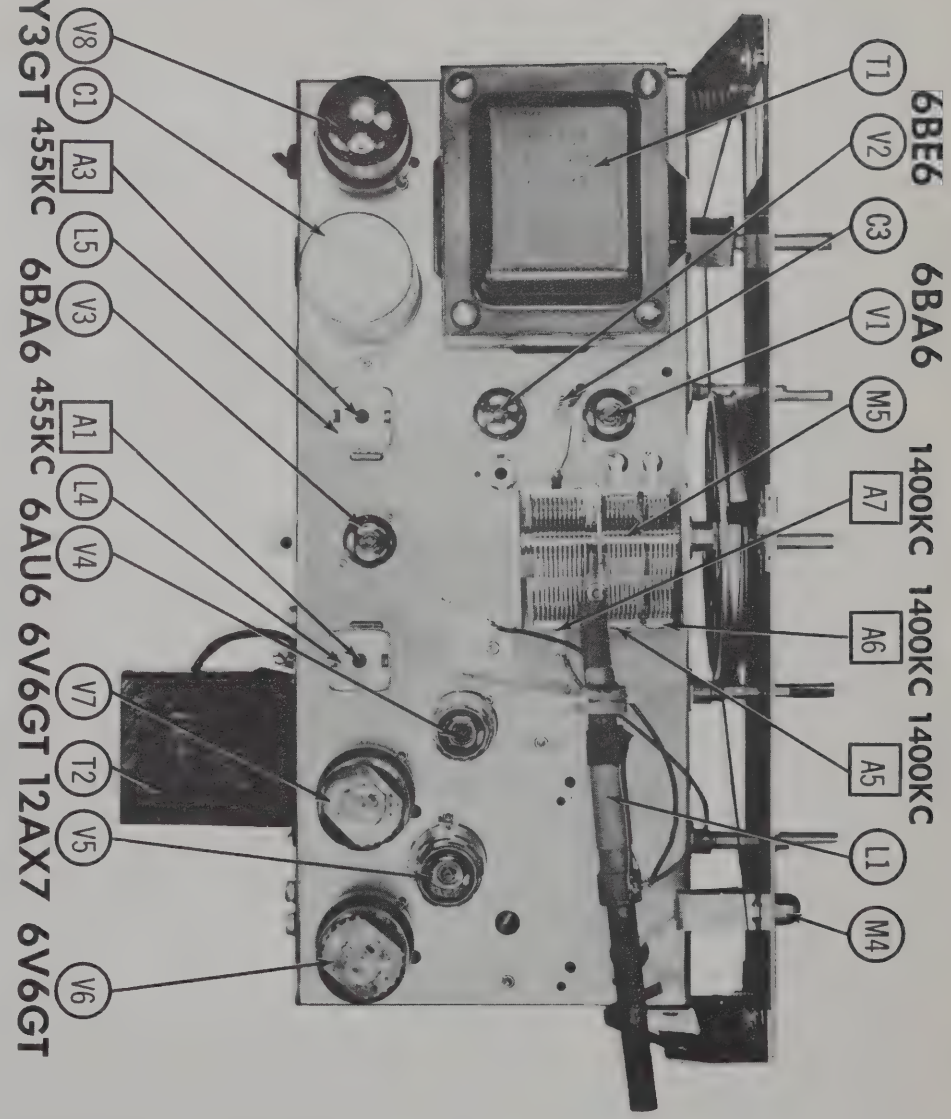
ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Stromberg-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▬20	450	111090	AFH4-76	D082	FP430.2	TM-4100	Q-370	TVL-4732
B	■20	450							
C	▲40	350							
D	25	25							
C2	2	450	111119	PRS450V2	BR245	TC70	TD-2-450	FM-4504	TVA-1701

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	100		110694	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C4	.05	400	110801	BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C5	47		110695	SI47	D6-470	TP29	GP2K-471	UC-5447	5GA-Q47	
C6	.05	400	110801	BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C7	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C8	.003	400	110698	SI3000	D6-302	CUB6D3	GP2-333-302	PT623	6TM-D3	
C9	.01	400	110687	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C10	5000		110850	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C11	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C12	100		110694	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C13	.05	400	110801	BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C14	5000		110850	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C15	220		110462	SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22	
C16	1000		110849	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C17	5000		110850	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C18	.02	600	110807	BPD-02	DD-203	CUB6S2	817-02	PT612	6TM-S2	
C19	.02	600	110807	BPD-02	DD-203	CUB6S2	817-02	PT612	6TM-S2	
C20	5000		110850	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C21	5000		110850	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	145192	ABT-74	A47F5-1Meg	Q19-137X	UT-443	Volume
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	KB-1	SWE-12	76-1	US-26	Attach to R1A
R2A	1Meg	½	145193	B-70	A47-1Meg-Z	Q13-137	U-53	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	1Meg	½	145193	B-70	A47-1Meg-Z	Q13-137	U-53	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Stromberg-Carlson PART No.	IRC PART No.	
R4	2.2Meg	½	149121	BTS-2.2Meg	
R5	68Ω	½	28144	BTS-68	
R6	3300Ω	½	149104	BTS-3300	
R7	22KΩ 5%	½	149109	BTS-22K	
R8	2.2Meg	½	149121	BTS-2.2Meg	
R9	1000Ω	½	149101	BTS-1000	
R10	68Ω	½	28144	BTS-68	
R11	47KΩ 5%	½	149111	BTS-47K	
R12	82KΩ	½		BTS-82K	Note 1
R13	390KΩ	½		BTS-390K	Note 2
R14	4.7Meg 5%	½	149123	BTS-4.7Meg	
R15	47KΩ 5%	½	149111	BTS-47K	
R16	470KΩ	½	149117	BTS-470K	
R17	10KΩ 5%	½	149107	BTS-10K	
R18	27KΩ 5%	½	28174	BTS-27K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Stromberg-Carlson PART No.	IRC PART No.	
R19	220KΩ 5%	½	28183	BTS-220K	
R20	4700Ω 5%	½	28166	BTS-4700	
R21	470KΩ	½	149117	BTS-470K	
R22	47KΩ 5%	½	149111	BTS-47K	
R23	5600Ω 5%	½	28167	BTS-5600	
R24	220KΩ 5%	½	28183	BTS-220K	
R25	470KΩ 5%	½	28187	BTS-470K	
R26	1000Ω	½	149101	BTS-1000	
R27	1000Ω	½	149101	BTS-1000	
R28	470KΩ	½	149117	BTS-470K	
R29	100KΩ	½	149385	BTS-100K	
R30	4700Ω	½	28166	BTS-4700	
R31	330Ω	2	149020	BTB-330	
R32	5600Ω	1	149184	BTA-5600	
R33	6000Ω	10	149496	PW10-6000	

Note #1. Some versions use a 470KΩ 1/2 W resistor in this application. (Mfgr. Part #149117).
Note #2. Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .6A	610VCT. @ .068A	5VAC @ 2A	6.3VAC @ 2.75A	161452	P9312			22R04	R-9B

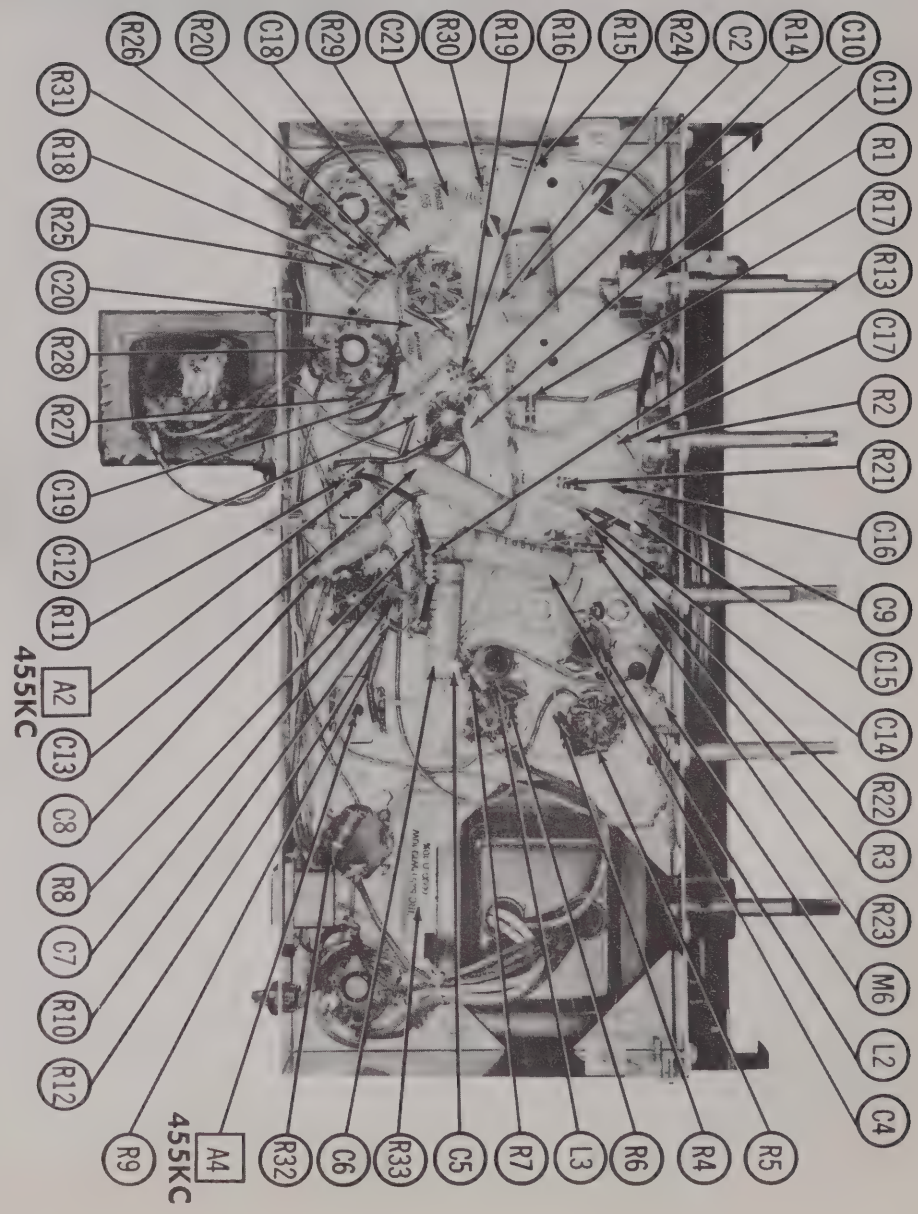
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6.3KΩ	6Ω	161261	Z1007	A-2904	A-3852	26S46	S-55Z	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Stromberg-Carlson PART No.	QUAM PART No.	RCA TYPE No.	
SP1	12"	PM	6Ω	155772	12A6Z6	412S7	
SP2	8"	PM	6Ω	155875	8A6Z6	208S4	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: Stromberg-Carlson PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coil	.3Ω		139073				
L2	RF Coil	.6Ω	10Ω*	114405				*Tapped @ 5.4Ω Tapped @ .6Ω
L3	Osc. Coil	8.3		114160				
L4	Input IF	15Ω	15Ω	114364	16-6758	BC-352	12-C1	
L5	Output IF	15Ω	15Ω	114453	16-6770	BC-355	12-C6	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: Stromberg-Carlson PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1		55-TB	N35TJ	47	0-1 or S-1 and 0-3	

ASTATIC AND ELECTRO VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

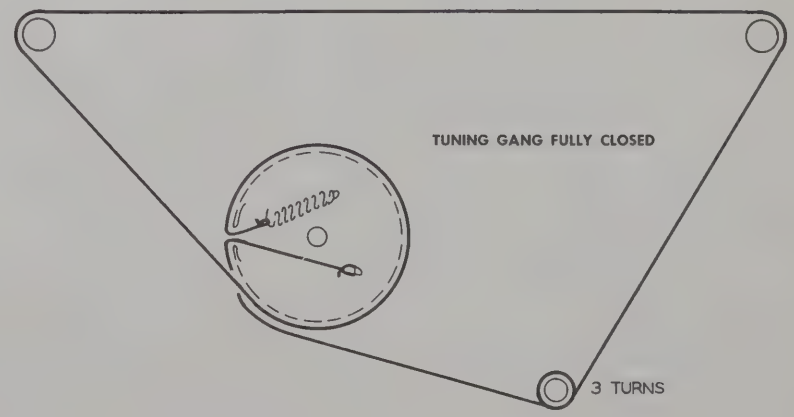
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

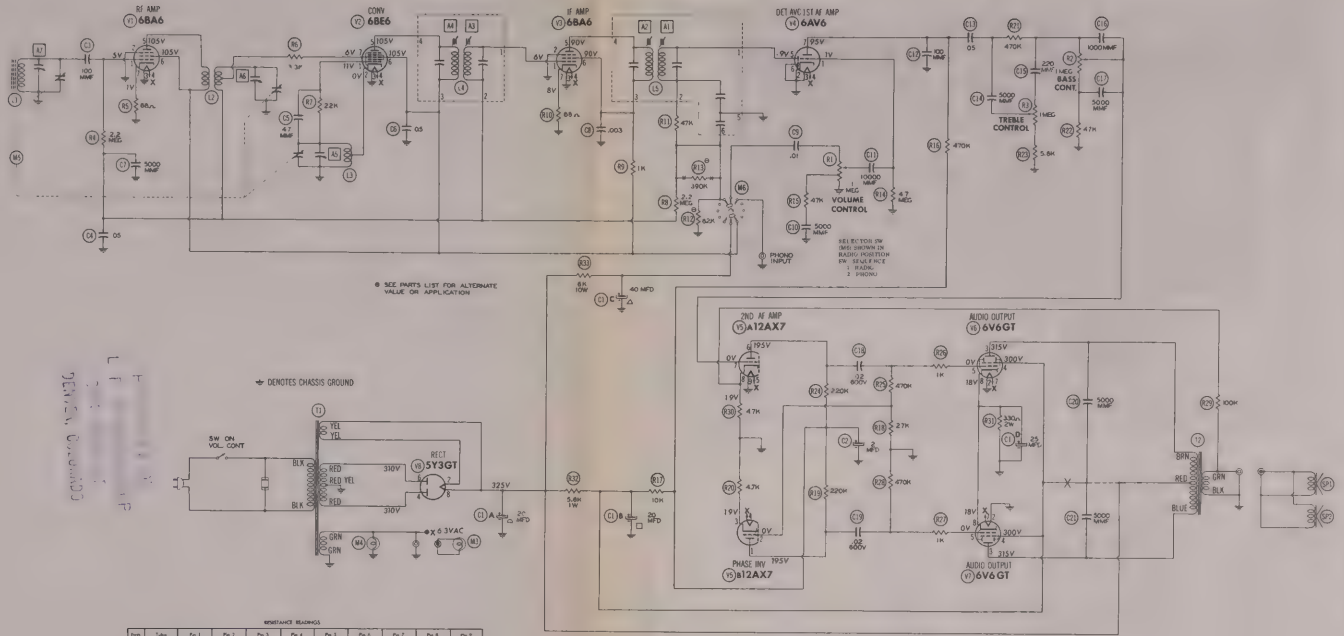
ITEM No.	REPLACEMENT DATA: Stromberg-Carlson PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M2		*JP-36 or † JPS-36 or ♦† JPS-36SD		*W-33TPA or † W-33TPS or ♦† W-33DS or ♦W-33TPD	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M3	Pilot Light	137012	Cabinet - #1855.
M4	Dial Light	29956	#44
M5	Tuning Cap.	110061	3 Gang (27-355MMF, 19-250MMF, 15-110MMF).
M6	Switch	158059	Radio-Phono (Rotary - Wafer Type).
	Cabinet	108536	Cherry Finish
	Knob	134302	All Controls



DIAL CORD STRINGING



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V-1	6BA6	4.8Meg	0Ω	0Ω	.1Ω	+6KΩ	+6KΩ	68Ω		
V-2	6BE6	22KΩ	5Ω	0Ω	1Ω	+6KΩ	+6KΩ	2.5Meg		
V-3	6BA6	2.5Meg	0Ω	0Ω	1Ω	+7KΩ	+7KΩ	68Ω		
V-4	6AV6	4.7Meg	0Ω	0Ω	1Ω	5MΩ	0Ω	+685KΩ		
V-5	12AX7	+255KΩ	27KΩ	4.7KΩ	1Ω	.1Ω	+235KΩ	1.47KΩ 1.5Meg	4.7KΩ	0Ω
V-6	6V6GT	TP	0Ω	+170Ω	+5.6KΩ	normal	TP	1Ω	330Ω	
V-7	6V6GT	TP	0Ω	+170Ω	+5.6KΩ	471KΩ	TP	1Ω	330Ω	
V-9	5Y3GT	NC	50KΩ	TP	90Ω	NC	90Ω	NC	50KΩ	

ALL MEASUREMENTS TAKEN IN RADIO POSITION.
** BASS CONTROL AT MAXIMUM CLOCKWISE POSITION.
* MEASURED FROM PIN 8 OF V8.
** BASS CONTROL AT MAXIMUM COUNTER-CLOCKWISE POSITION
TP TIE POINT
NC NO CONNECTION.

IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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*TRADE MARK

RETMA MEMBER

SYLVANIA MODELS 21C501, 21C502, 21C601, 21D802, 21T201, 24C601, 24T301 Series (Ch. 1-533, -1, -2, -5)

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SYLVANIA MODEL 21T201 (Ch. 1-533-2)

TRADE NAME	Sylvania	MODELS	CHASSIS
		21C501, 21C502, 21C601, 21D802, 21T201, 24C601, 24T301 Series	1-533, -1, -2, -5
MANUFACTURER	Sylvania Electric Products, Inc., Radio & Television Div., 254 Rano St., Buffalo 7, N.Y.		
TYPE SET	Television Receiver		
TUBES	Twenty-three		
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING 1.86 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

INDEX

Alignment Instructions 6, 7, 8
Drive Cord Stringing (UHF) 12
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 20
Parts List and Descriptions ..... 13 thru 16
Photographs
Cabinet-Rear View 20
Capacitor Identification 3, 10
Chassis-Top View 5
RF Tuner 17, 19
Photographs (Cont)
Resistor Identification 4, 9
Trans., Inductor & Alignment Identification 5
Resistance Measurement 18
Servicing in the Field 1
Schematic (Alternate Tuner) 12
Schematic (TV) 2
Tube Failure Check Chart 11
Tube Placement Chart (Bottom View) 18
Tube Placement Chart (Top View) 11

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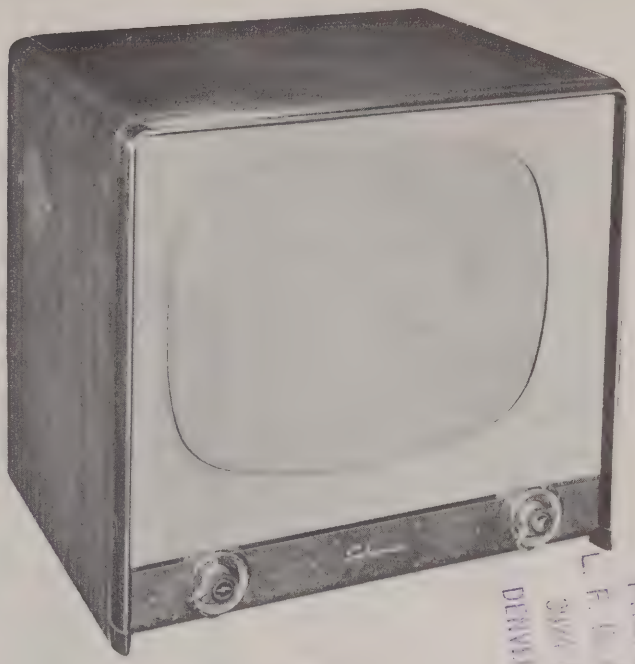

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MODELS	CHASSIS
21C501, 21C502, 21C601, 21D802, 21T201, 24C601, 24T301 Series	1-533, -1, -2, -5

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Loosen set screws on brightness control knob and channel selector knob with a clutch type screwdriver and remove 6 control knobs from front panel of cabinet.

2. Remove 8 wood screws. Remove rear cover.

3. Remove 2 wood screws holding 2 (VHF & UHF) antenna terminal brackets.

4. Disconnect speaker leads, HV lead, yoke plug, HaloLight plug and picture tube socket.

5. Remove 6 chassis bolts. Remove chassis.

6. Remove 2 speaker nuts. Remove speaker.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 15.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to the set. Adjustment is located on top of the chassis. Set the horizontal hold control to the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L43) located on top of the chassis.

FUSES

Two fuses are used. One for LV power supply protection and one for filament supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting a magnetic ring around the neck of picture tube located flush against the yoke. Turn the knurled knob and at the same time rotate the ring around the tube until picture is properly centered.

ANTI-PIN CUSHION ADJUSTMENT

Reduce the picture size so that the sides of the raster are visible and position the magnets so that all sides are straight lines and the corners are at right angles.

SYLVANIA MODELS 21C501, 21C502, 21C601, 21D802, 21T201, 24C601, 24T301 Series (Ch. 1-533, -1, -2, -5)

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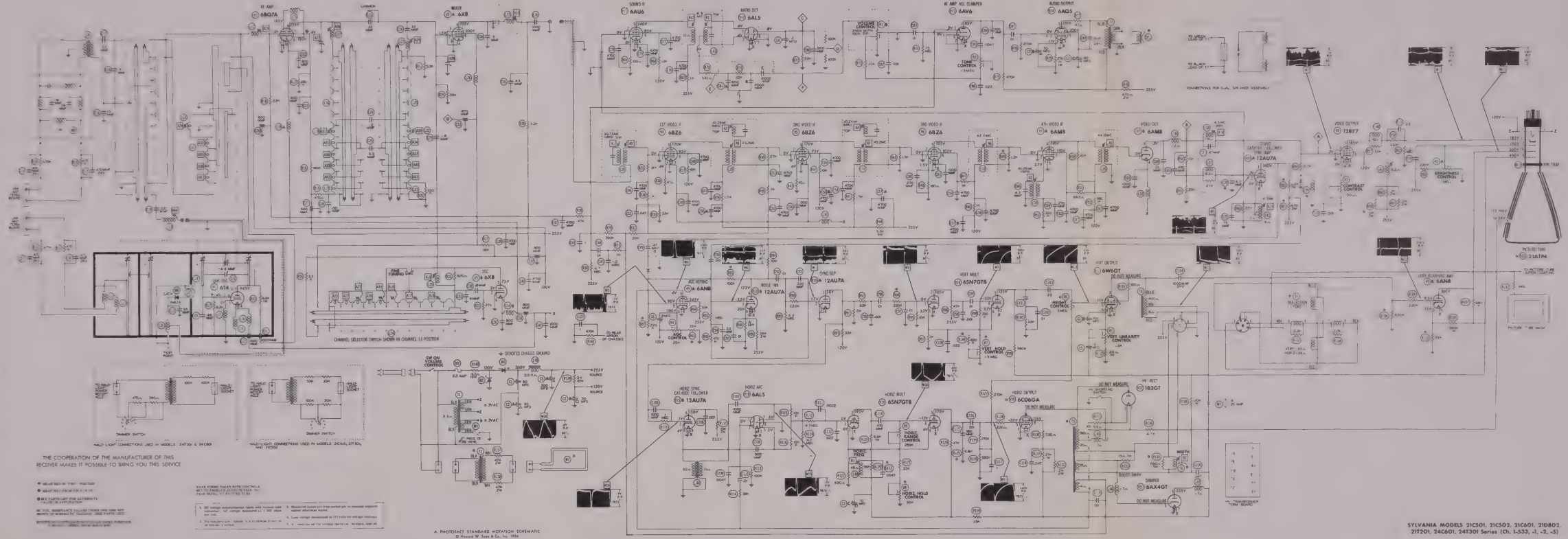
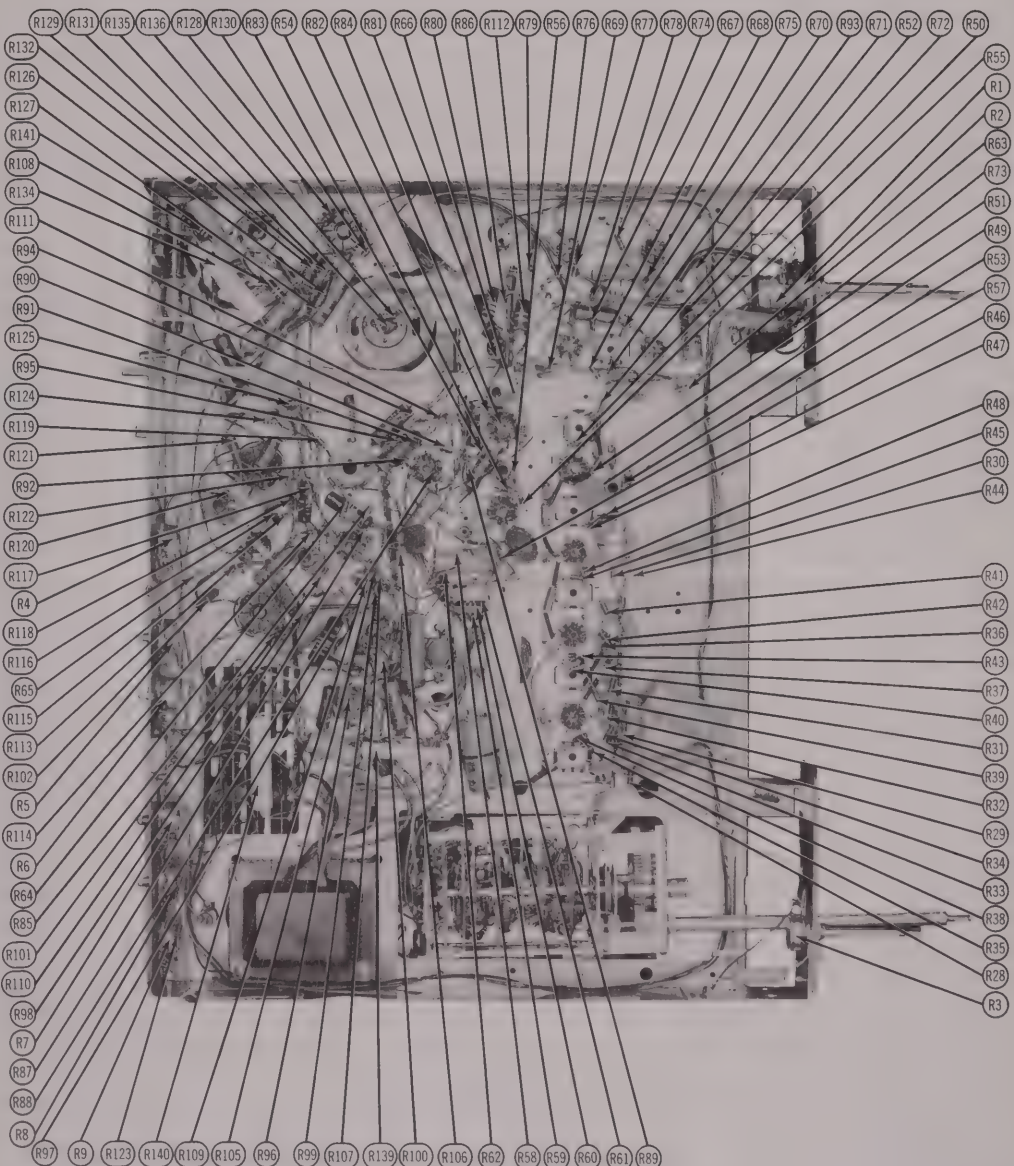

RF AMP
6BQ7A
MIXER
6X8
SOUND IF
6AU6
RATIO DET
6AL5
VOLUME CONTROL
TONE CONTROL
AF AMP AGC CLAMPER
6AV6
AUDIO OUTPUT
6AQ5
1ST VIDEO IF
6BZ6
2ND VIDEO IF
6BZ6
3RD VIDEO IF
6BZ6
4TH VIDEO IF
6AM8
VIDEO DET
6AM8
VIDEO OUTPUT
12BY7
CONTRAST CONTROL
BRIGHTNESS CONTROL
KINESCOPE
21ATP4
6T4
6X8
6AN8
12AU7A
65N7GT8
6W6GT
HEIGHT CONTROL
VERT LINEARITY CONTROL
VERT HOLD CONTROL
VERT BLANKING AMP
6AN8
HORIZ SYNC CATHODE FOLLOWER
12AU7A
HORIZ AFC
6AL5
HORIZ MULT
65N7GT8
HORIZ OUTPUT
6CD6GA
DO NOT MEASURE
HV RECT
1B3GT
HORIZ HOLD CONTROL
WIDTH
DAMPER
6AX4GT
DO NOT MEASURE
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
DENOTES CHASSIS GROUND
+255V SOURCE
+120V SOURCE
TO RELAY ON CHASSIS
TO PICTURE TUBE SUPER CONTROL
TO FRONT OF CHASSIS
TO SPEAKER
CONNECTIONS FOR DUAL SPEAKER ASSEMBLY
TO SPEAKER
TO SPEAKER
TO SPEAKER

SYLVANIA MODELS 21C501, 21C502, 21C601, 21D802, 21T201, 24C601, 24T301 Series (Ch. 1-533, -1, -2, -5)

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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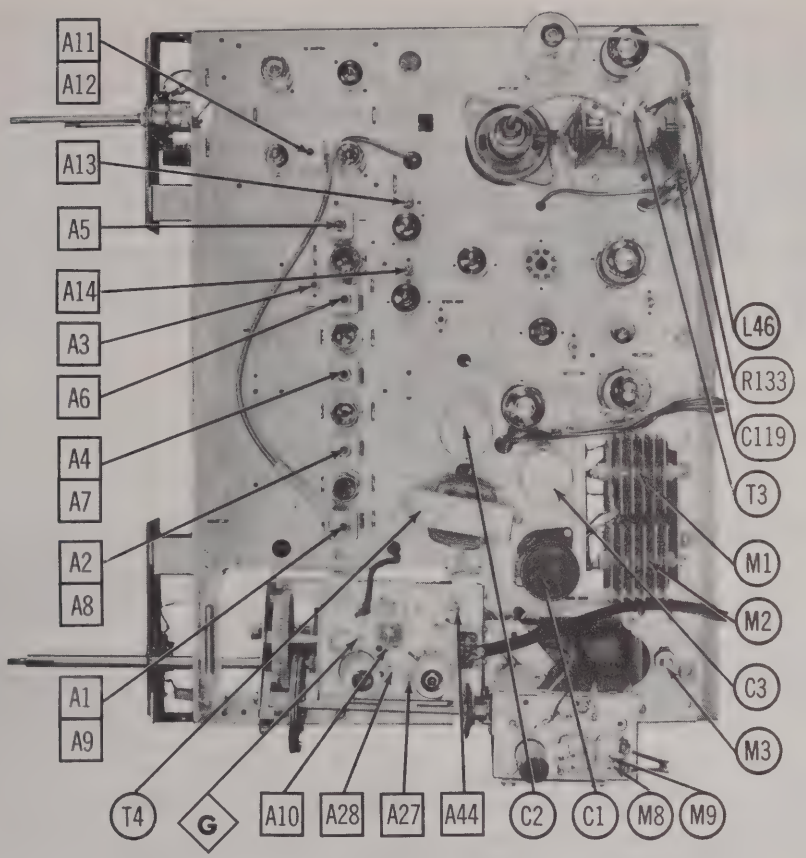
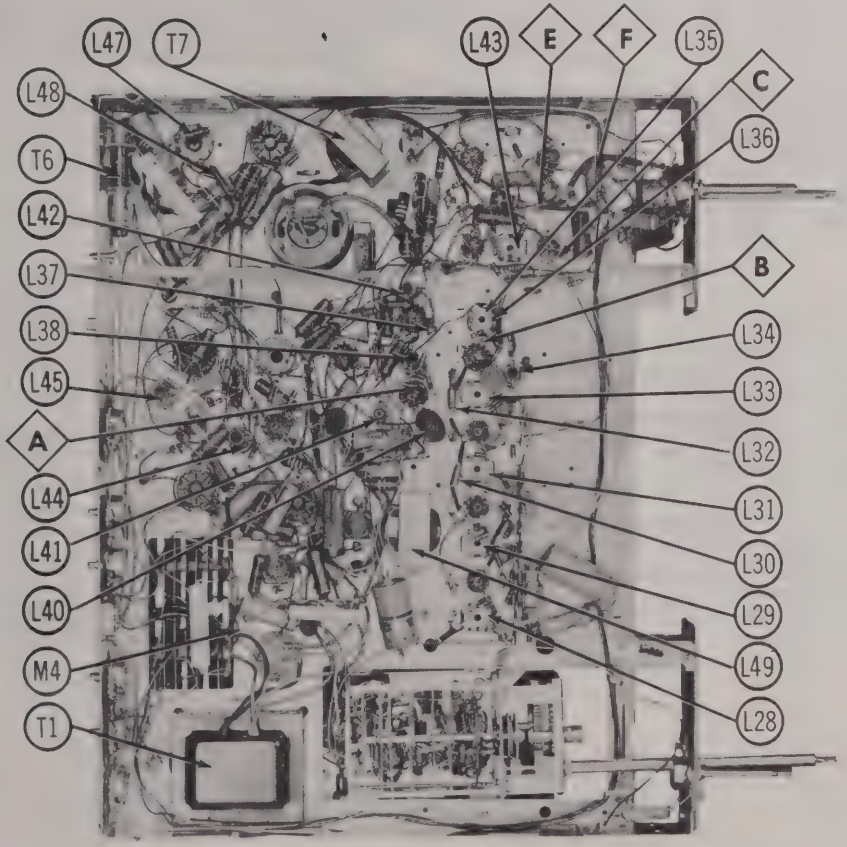


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
The high voltage lead should be securely taped away from the chassis.
Allow a 15 minute warm-up period for receiver and test equipment

VIDEO IF ALIGNMENT

Connect the negative lead of a 3.5 volt bias supply to the ungrounded side of C53. Connect the positive lead to chassis. Use non-metallic alignment tools.
If the marker generator is a separate unit from the sweep generator, loosely couple marker generator to sweep generator output.
Use low marker output.
Keep all leads from generators and scope shielded and as short as possible.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V3). Low side to chassis.	Not used	39.75MC Unmod.	Any non-interfering high band channel	Use VTVM DC probe to point Ⓐ. Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	"	41.25MC	"	"	A3, A3	"
3.	"	"	"	47.25MC	"	"	A4	"
4.	"	"	"	44.0MC	"	"	A5	Adjust for maximum deflection.
5.	"	"	"	43.0 MC	"	"	A6	"
6.	"	"	"	45.2MC	"	"	A7	"
7.	"	"	"	43.2MC	"	"	A8	"
8.	.01MFD	High side to pin 1 (grid) of 6BZ6 (V4). Low side to chassis.	43.0MC (90MC Swp.)	41.25MC 42.1MC 45.75MC 47.25MC	"	Vert. Amp. thru 33KΩ to point Ⓐ. Low side to chassis.		Disconnect IF input cable. Adjust for response similar to Fig. 1. A3 and A3 is used to place 41.25MC marker in trap notch. 42.1MC marker is positioned by adjusting A6. 45.75MC marker is controlled by A7. A4 positions 47.25MC marker in the notch. A5 and A8 are adjusted to remove tilt, hump, or dip from curves.
9.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V3). Low side to chassis.	42MC (90MC Swp.)	39.75MC 41.25MC 42.1MC 45.75MC 47.25MC	"	"	A9, A10	Adjust A9 and A10 simultaneously to place the 45.75MC marker at 50% on curve (Fig. 4). If 42.1MC marker is not at 70% position, readjust A9 and A10 to give best compromise of proper marker location and minimum tilt. Adjust A1 to position 39.75MC marker in trap notch.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ(±2%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓑ as shown on the schematic.
Short pin 1 of 6BZ6 (V4) to chassis with a short jumper wire or clip lead.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	Direct	High side to point Ⓑ. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to pin 5 of 6AL5 (V12). Common to pin 7 of V12.	A11, A12, A13	Adjust for maximum deflection.
11.	"	"	"	"	DC probe thru 100KΩ to point Ⓐ. Common to point Ⓑ.	All	Adjust for zero reading. A positive and negative reading will be obtained on either side of correct setting. Remove 100KΩ resistors. Remove short from pin 1 of V4.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Direct	High side to point Ⓐ. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any non-interfering channel	Vert. Amp. to point Ⓒ. Low side to chassis.	A13, A13	Adjust for maximum amplitude and symmetry as in Fig. 5.
11.	"	"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	All	Adjust so that 4.5MC marker occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Ground pin 1 of 6BZ6 (V4) with a short clip lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	Direct	High side to pin 7 (cathode) of 6AM8 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	RF probe to pin 11 (cathode) of picture tube. Common to chassis.	A14	Adjust for MINIMUM deflection. Remove short from V4.

ALTERNATE 4.5MC TRAP ALIGNMENT USING ON THE AIR SIGNAL

Turn set on and tune in a TV station. Misadjust fine tuning until sound bars can be seen in the picture. A fine grain-like background will be noted in the picture.
Adjust A14 until the grain-like background is eliminated or at a minimum.
Readjust the fine tuning for a normal picture

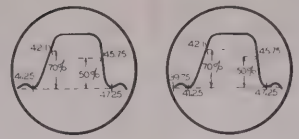


FIG. 1

FIG. 2

FIG. 3

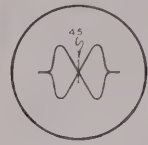


FIG. 4

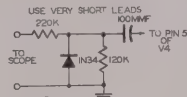


FIG. 5

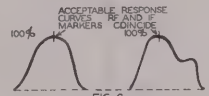


FIG. 6

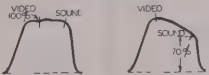
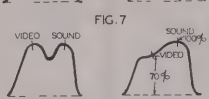
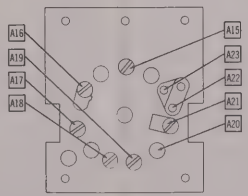


FIG. 7





VHF OSCILLATOR ALIGNMENT

Use an isolation transformer to protect the test equipment.
Use only enough sweep generator output for usable pattern on scope
Use high scope gain.
Keep leads from test equipment to tuner alignment connections as short as possible. Leads between chassis and alignment equipment should be shielded. Tuner shield should be kept in place. Connect the negative lead of a 3.5 volt bias supply to the green wire from the tuner. Connect the positive lead to chassis.
Unsolder primary of L39 from pin 5 of V4. Connect a 330 ohm resistor from pin 5 of V4 to B+ end of L39 primary.
Remove V5 from its socket.
During alignment, the use of two marker generators is required. Generator #1 (1F) is coupled loosely to one side of the antenna terminals. If sweep generator has a built in marker generator, it should be used as marker generator #2 (RF). If not, connect a second generator (RF) to the other side of the antenna terminals, coupled loosely. Use low marker generator output to avoid distortion of the response curve.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC (10MC Swp.)	211.25MC (RF marker) 45.75MC (IF marker)	13	Vert. amp. thru detector (Fig. 5) to pin 5 (plate) of V4.	A15	Adjust so that RF and IF markers coincide as in Fig. 6. Curves may not be symmetrical until RF alignment is complete.
14.	"	"	201MC (10MC Swp.)	199.25MC 45.75MC	11	"	A16	"
15.	"	"	189MC (10MC Swp.)	187.25MC 45.75MC	9	"	A17	"
16.	"	"	177MC (10MC Swp.)	175.25MC 45.75MC	7	"	A18	"
17.	"	"	[redacted] (10MC Swp.)	83.25MC 45.75MC	6	"	A19	"
18.	"	"	79MC (10MC Swp.)	77.25MC 45.75MC	5	"	A20	Compress or expand coil turns until markers coincide as in Fig. 6.
19.	"	"	67MC (10MC Swp.)	67.25MC 45.75MC	4	"	A21	Adjust so that markers coincide as in Fig. 6.
20.	"	"	63MC (10MC Swp.)	61.25MC 45.75MC	3	"	A22	Compress or expand coil turns until markers coincide as in Fig. 6.
21.	"	"	57MC (10MC Swp.)	55.25MC 45.75MC	2	"	A23	"

VHF RF AND MIXER ALIGNMENT

Care must be exercised not to disturb preceeding aligned coil increments.
Connect bias as under "VHF Oscillator Alignment"
Remove IF input cable from VHF tuner socket.
Remove VHF tuner cover to gain access to internal coils and adjustments.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
22.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC (10MC Swp.)	211.25MC 215.75MC	13	Vert. amp. thru .01MFD to point Ⓐ. Low side to chassis.	A24, A25, A26	Adjust A24 for maximum amplitude. Adjust A25 for a flat-topped response. Adjust A26 for proper position of markers. See Fig. 7. Picture carrier should be at 100%. Sound carrier may be as low as 70%.
23.	"	"	177MC (10MC Swp.)	175.25MC 179.75MC	7	"	A27, A28	Adjust for symmetrical response as in Fig. 7.
24.	"	"	207MC (10MC Swp.)	205.25MC 209.75MC	12	"		Check each channel for response similar to Fig. 7. If not within limits, repeat steps 22 and 23. If necessary, make compromise adjustments of A24 thru A28 for best acceptable response.
			201MC (10MC Swp.)	199.25MC 203.75MC	11			
			195MC (10MC Swp.)	193.25MC 197.75MC	10			
			189MC (10MC Swp.)	187.25MC 191.75MC	9			
			183MC (10MC Swp.)	181.25MC 185.75MC	8			
25.	"	"	85MC (10MC Swp.)	83.25MC 87.75MC	6	"	A29, A30, A31	Adjust A29 for maximum mid-band height. Adjust A30 for flat-topped response. Adjust A31 for proper marker position as in Fig. 7.
26.	"	"	79MC (10MC Swp.)	77.25MC 81.75MC	5	"	A32, A33, A34	Compress or expand coil turns for curve similar to Fig. 7.
27.	"	"	69MC (10MC Swp.)	67.25MC 71.75MC	4	"	A35, A36, A37	"
28.	"	"	63MC (10MC Swp.)	61.25MC 65.75MC	3	"	A38, A39, A40	"
29.	"	"	57MC (10MC Swp.)	55.25MC 59.75MC	2	"	A41, A42, A43	"

30. Recheck all channels for flat-topped response. If necessary, retouch A34 thru A43 in order given. A dip of 30% is permissable on all channels. Remove 330Ω resistor from plate of V4 to B+. Restore connection of L39. Remove test.

SYLVANIA MODELS 21C501, 21C502, 21C601, 21D802, 21T201, 24C601, 24T301 Series (Ch. 1-533, -1, -2, -5)

ALIGNMENT INSTRUCTIONS (cont)

UHF IF INPUT CIRCUIT ALIGNMENT

Temporarily remove UHF tuner from its mounting by removing the three (3) screws holding the UHF tuner to the bracket. Remove the two (2) screws holding the case cover to the UHF tuner.
Remove 1N82A crystal. Solder one end of a 270 ohms resistor to the L8 side of crystal holder. Connect the sweep generator to the other end of 270 ohm resistor.
If sweep generator has no built-in marker, loosely couple separate marker generator near the sweep generator connections near the added 270 ohm resistor.
Connect bias as under "Video IF Alignment".
Use only enough sweep generator output to provide a usable pattern on scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
31.	270Ω Carbon Resistor	High side to loose end of 270Ω resistor. Low side to chassis.	43. 5MC (10MC Swp.)	42. 1MC 45. 75MC	UHF	Vert. Amp. thru .01MFD to point (G). Low side to chassis.	A44	Adjust for response similar to Fig. 2. Remove test equipment and 270Ω resistor from crystal holder. Replace crystal in its holder.

UHF TUNER ALIGNMENT

The UHF tuner portion of this set has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver should not be required in the field.

VHF OSCILLATOR ALIGNMENT FOR TUNER #323-0070

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
32.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC (10MC Swp.)	211. 25MC 215. 75MC	13	Vert. amp. thru 10KΩ to pin 2 (grid) of V8 (Video Output Tube). Low side to chassis	A45	Adjust to place sound marker in trap notch as in Fig. 8. Video marker should be at 50%.
			207MC (10MC Swp.)	205. 25MC 209. 75MC	12		A46	
			201MC (10MC Swp.)	199. 25MC 203. 75MC	11		A47	
			195MC (10MC Swp.)	193. 25MC 197. 75MC	10		A48	
			189MC (10MC Swp.)	187. 25MC 191. 75MC	9		A49	
			183MC (10MC Swp.)	181. 25MC 185. 75MC	8		A50	
			177MC (10MC Swp.)	175. 25MC 179. 75MC	7		A51	
			85MC (10MC Swp.)	83. 25MC 87. 75MC	6		A52	
			79MC (10MC Swp.)	77. 25MC 81. 75MC	5		A53	
			69MC (10MC Swp.)	67. 25MC 71. 75MC	4		A54	
			63MC (10MC Swp.)	61. 25MC 65. 75MC	3		A55	
			57MC (10MC Swp.)	55. 25MC 59. 75MC	2		A56	

VHF RF AND MIXER ALIGNMENT FOR TUNER 323-0070

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
33.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	207MC (10MC Swp.)	205. 25MC 209. 75MC	12	Vert. Amp. thru 10KΩ to point (H). Low side to chassis.	A57, A58, A59	Adjust for response curve similar to Fig. 9 with markers above 90%.
34.	"	"	213 MC (10MC Swp.)	211. 25MC 215. 75MC	13			If markers fall below 70% on any channel make compromise adjustment of A57, A58 and A59 with the channel switch set to that channel. Then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp.)	199. 25MC 203. 75MC	11			
			195MC (10MC Swp.)	193. 25MC 197. 75MC	10			
			189MC (10MC Swp.)	187. 25MC 191. 75MC	9			
			183MC (10MC Swp.)	181. 25MC 185. 75MC	8			
			177MC (10MC Swp.)	175. 25MC 179. 75MC	7			
			85MC (10MC Swp.)	83. 25MC 87. 75MC	6			
			79MC (10MC Swp.)	77. 25MC 81. 75MC	5			
			69MC (10MC Swp.)	67. 25MC 71. 75MC	4			
			63MC (10MC Swp.)	61. 25MC 65. 75MC	3			
			57MC (10MC Swp.)	55. 25MC 59. 75MC	2			

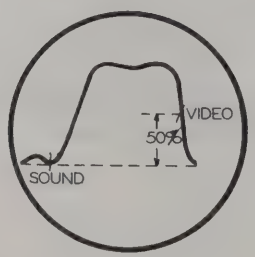


FIG. 8

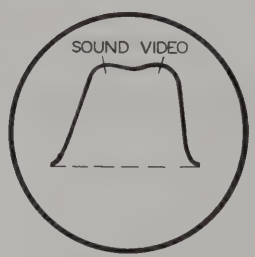
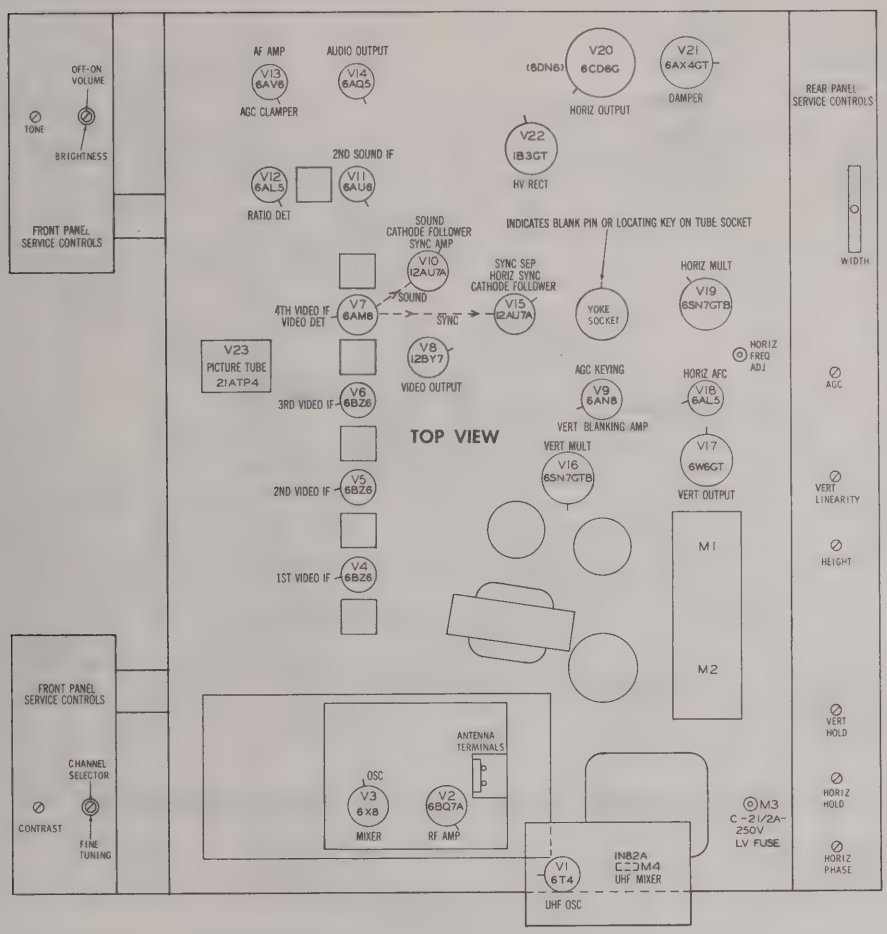


FIG. 9

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

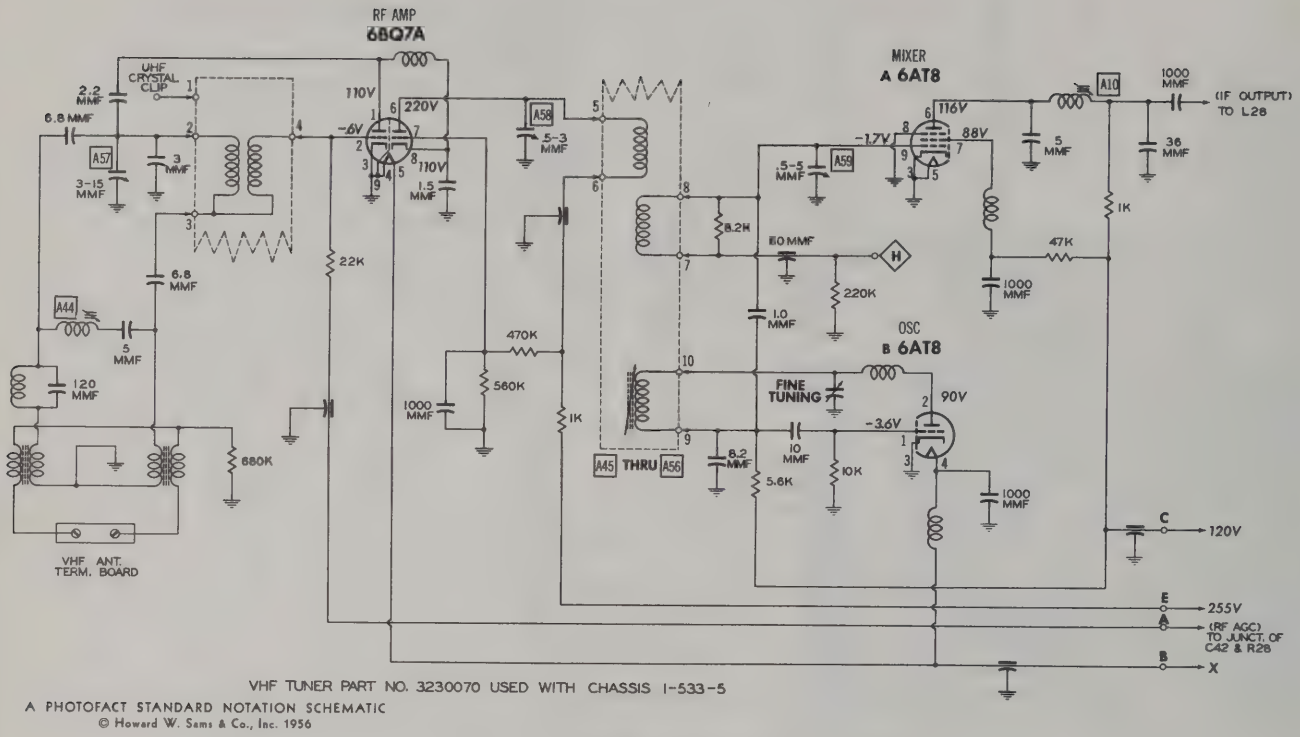
POWER SUPPLY FAILURE
No raster, no sound - **Selenium Rectifiers (M1 & M2), fuses (M3 & M4)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, V6, V7 (V1 - UHF only)**
No pic, no sound, has snow - **V2, V3, V4**
No pic, has sound, has raster - **V8, V9, V23**
Has pic, no sound - **V10, V11, V12, V13, V14**
Overloaded picture - **V9, V13**

SYNC FAILURE
No vert. sync - **V15, V16**
No horiz. sync - **V15, V18, V19**
No vert. or horiz. sync - **V10, V15**

SWEEP FAILURE
No raster, has sound - **V19, V20, V21, V22, V23**
No vertical deflection - **V16, V17**
Poor vert. linearity or foldover - **V16, V17**
Poor horiz. linearity or foldover - **V19, V20, V21**
Narrow picture - **V19, V20, V21, V22, M1, M2**
Vert. off freq. - **V15, V16**
Horiz. off freq. - **V15, V18, V19**

SYLVANIA MODELS 21C501, 21C502, 21C601, 21D802, 21T201, 24C601, 24T301 Series (Ch. 1-533, -1, -2, -5)



VHF TUNER PART NO. 3230070 USED WITH CHASSIS 1-533-5

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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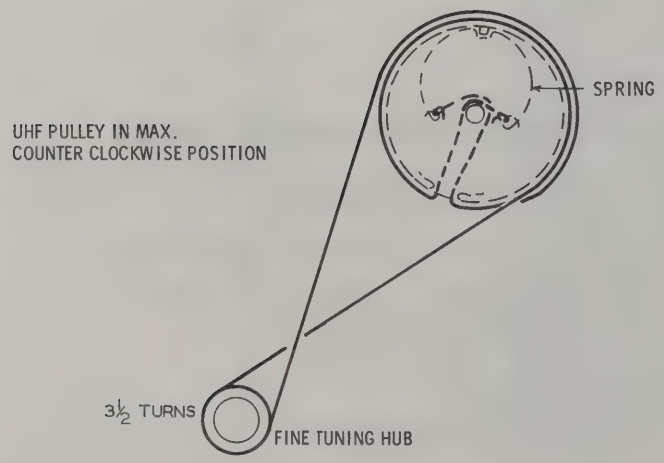
ALTERNATE VHF TUNER SCHEMATIC



UHF DRIVE CORD STRINGING

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA		NOTES
		SYLVANIA PART No.	STANDARD REPLACEMENT	
V1	UHF Oscillator	6T4	6T4	
V2	RF Amplifier	6BQ7A	6BQ7A	
V3	Mixer-Oscillator	6X8	6X8	
V4	1st. Video IF Amplifier	6BZ6	6BZ6	
V5	2nd. Video IF Amplifier	6BZ6	6BZ6	
V6	3rd. Video IF Amplifier	6BZ6	6BZ6	
V7	4th. Video IF Amplifier-Video Detector	6AM8	6AM8	
V8	Video Output	12BY7	12BY7	
V9	AGC Keying-Vert. Blanking Amplifier	6AN8	6AN8	
V10	1st. Sound IF Amplifier-Cathode Follower-Sync Amplifier	12AU7A	12AU7A	
V11	2nd. Sound IF Amplifier	6AU6	6AU6	
V12	Ratio Detector	6AL5	6AL5	
V13	AF Amplifier-AGC Clamper	6AV6	6AV6	
V14	Audio Output	6AQ5	6AQ5	
V15	Sync Separator-Horiz. Sync Cathode Follower	12AU7A	12AU7A	
V16	Vert. Mult.	6SN7GTB	6SN7GTB	
V17	Vert. Output	6W6GT	6W6GT	
V18	Horiz. AFC	6AL5	6AL5	
V19	Horiz. Mult.	6SN7GTB	6SN7GTB	
V20	Horiz. Output	6CD6GA	6CD6GA	6DN6 may be used in some versions
V21	Damper	6AX4GT	6AX4GT	
V22	HV Rectifier	1B3GT	1B3GT	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	SYLVANIA PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V23	21ATP4 ① 24YP4①③	21ATP4 ① 24YP4 ①	21ATP4 ① 24YP4 ①	21ATP4 ② 24YP4②	① Aluminized ② Silver screen "85" ③ Used in Models 24T301, 24C601

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	80	150	161-1023	RE1029	XA006	FP138	TM-80-150	D-130	TVL-1421
C2A	▲80	150	161-4019	RE1028		FP453	TM-3040	Q-187	R2153
B	■20	350				TC65	TD-60-350	MT-1550	
C	▲60	350							
D	100	50							
C3A	▲200	350	161-3023	RE1030		FP332.4	TM-3137	Q-221.5	R2152
B	▲50	25				TC29	TD-100-450	FM-4510	
C	■10	350							
C4	2	50	161-1001	PRS50V2		TC302	TD-2-50	MMT-0505	TVA-1301
C5	10	500	161-1022	PRS500V10		TC81	TD-10-500	MT-4710	TVA-1905
C6	2	50	161-1001	PRS50V2	BBR2-50T	TC302	TD-2-50	MMT-0505	TVA-1301

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	470	2000	174-04702	HVD-30-47	DD30-471	V2T47	3KV-471	DC30347	20GA-T47	
C8	470	2000	174-04702	HVD-30-47	DD30-471	V2T47	3KV-471	DC30347	20GA-T47	
C9	.68				TCZ-R68	TZ02	NP0A-0R68			
C10	1-4.6									
C11	1000									
C12	1000									
C13	33			N750-DI33	TCN-33	N029	N750K-330		5TCU-Q33	
C14	470	2000	174-04702	HVD-30-47	DD30-471	V2T47	3KV-471	DC30347	20GA-T47	
C15	470	2000	174-04702	HVD-304-7	DD30-471	V2T47	3KV-471	DC30347	20GA-T47	
C16	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C17	22			SI220	D6-220	TP22	GP2K-221	UC-5422	5GA-Q22	
C18	5			SI5	D6-050	TP06	GP1K-050	ZT-555	5GA-V5	
C19	220			SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22	
C20	800			EF-001	MFT-1000				503C-D1	
C21	800			BPD-0008	DD-801	K067	831-801	DC-521	5GA-T8	
C22	800			BPD-0008	DD-801	K067	831-801	DC-521	5GA-T8	
C23	.33									
C24	1.2									
C25	3.3			NP0-SI3.3	TCZ-3R3	TZ06	NP0A-3R3	ZT-5533	5TCCB-V33	
C26	150			BPD-00015	DD-151	G046	811-151	UC-5315	5GA-T15	
C27	800			EF-001	MFT-1000				503C-D1	
C28	33			SI33	D6-330	TP27	GP1K-330	UC-5433	5GA-Q33	
C29	1.8									
C30	18									
C31	8									
C32	800			BPD-0008	DD-801	K067	831-801	DC-521	5GA-T8	
C33	470			EF-00047	MFT-500				503C-T47	
C34	5			SI5	D6-050	TP06	GP1K-050	ZT-555	5GA-V5	
C35	43				TCZ-43	N032	NP0L-430			
C36	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C37	800			EF-001	MFT-1000				503C-D1	
C38	800			EF-001	MFT-1000				503C-D1	
C39	4700		166-4700D	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C40	4700		166-4700D	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C41	1000		166-1000D	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C42	4700		166-4700D	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C43	.1	200	160-0601	P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C44	.01	200	160-0611	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C45	1.0	200	169-0018	P288N-1.0		CUB2W1		PT41	2TM-M1	
C46	4700		166-4700D	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C47	4700		166-4700D	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C48	4700		166-4700D	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C48	1000		164-1000D	BPD-001	DD-102	K069	801-001	DC-531	5BK-D1	
C50A	4700		168-001D	BPD-X20047	DD8-502	DK079	841-0047	DC-525	5BK-D47	
B	4700						841-0047	DC-525		
C51	4700		164-4700D	BPD-0047	DD-473	K079	811-0047	DC-525	5BK-D47	
C53	4700		164-4700D	BPD-0047	DD-473	K079	811-0047	DC-525	5BK-D47	
C53	047	200	160-0047P	BPD-05	DP-503	CU2B047		DT4047	27M-S47	
C54	4700		164-4700D	BPD-0047	DD-473	K079	811-0047	DC-525	5BK-D47	
C55	4700		164-4700D	BPD-0047	DD-473	K079	811-0047	DC-525	5BK-D47	
C56	1000		164-1000D	BPD-001	DD-102	K069	801-001	DC-531	5BK-D1	
C57A	4700		168-001D	BPD-X20047	DD8-502	DK079	841-0047	DC-525	5BK-D47	
B	4700						841-0047	DC-525		
C58	4700		164-4700D	BPD-0047	DD-473	K079	811-0047	DC-525	5BK-D47	
C59	4700		164-4700D	BPD-0047	DD-473	K079	811-0047	DC-525	5BK-D47	
C60	370		164-0370M	BPD-00037	DD-371	G054	811-371	DC-5327	5GA-T37	
C61	1000		164-1000D	BPD-001	DD-102	K069	801-001	DC-531	5BK-D1	
C62	4700		164-4700D	BPD-0047	DD-473	K079	811-0047	DC-525	5BK-D47	
C63	4700		164-4700D	BPD-0047	DD-473	K079	811-0047	DC-525	5BK-D47	
C64	370		164-0370M	BPD-00037	DD-371	G054	811-371	DC-5327	5GA-T37	
C65	1000		164-1000D	BPD-001	DD-102	K069	801-001	DC-531	5BK-D1	
C66	43		164-0043P	TCZ-43	TZ31	KP0L-430				
C67	4700		164-4700D	BPD-0047	DD-473	K079	811-0047	DC-525	5BK-D47	
C68	10		160-0039P	NP0-D810	TC2-10	Z018	MP0K-100	ET-541	97CC-Q1	
C69	470	500	163-0470	BP470		DM-471	5W5T47	GIPK-471	DC-5347	1FM-347
C70	4.7		163-0039	NPO-4R7	TCZ-4R7	DZ07	9PA-4R7	ET-5667	97CCB-Y47	Note 1
C71	47		160-0047P	S147		D6-470	TP3	GIPK-470	DC-5447	5GA-Q47
C72	.001	600	160-0631	SU500		D6-102	CUB4D1	GIPL-102	PT5D1	57M-D1
C73	.33	200	160-0603	P388N-33			P388N-33		P7603	27M-P33
C74	.1	400	160-0601	P488N-1		DP-104	CUB4P1		P7401	47M-P1
C75	47		160-0047P	S147		D6-470	TP3	GIPK-470	DC-5447	5GA-Q47
C76	4700		164-4700D	BPD-0047	DD-473	K079	811-0047	DC-525	5BK-D47	
C77	4700		164-4700D	BPD-0047	DD-473	K079	811-0047	DC-525	5BK-D47	
C78	4700		164-4700D	BPD-0047	DD-473	K079	811-0047	DC-525	5BK-D47	
C79	1000		164-1000D	BPD-001	DD-102	K069	801-001	DC-531	5BK-D1	
C80	1000		165-1002D	BPD-001	DD-102	K069	801-001	DC-531	5BK-D1	
C81A	1000				DD-102	K069	801-001	DC-531	5BK-D1	
B	4000		†190-0023	†PA386	DE8-403	K079	811-004	DC-534	5BK-D4	
C	10000				DE8-103	K083	811-001	DC-511	5BK-S1	
C82	.001	500	160-0631	SU000	D6-102	CUB4D1	GIPL-102	PT5D1	57M-D1	
C83	.01	500	160-0641	BPD-01	DD-103	CUB4S1		PT4U	47M-S1	
C84	100	500	163-0100	SU00	D6-101	5W5T1	GIPK-101	MC535	1FM-31	
C85	.0047	400	160-0634T	BPD-0047	DD-473	CUB4D47	811-0047	PT6347	57M-D47	
C86	.033	500	160-0633	BPD-03	DD-303	CUB4S33	811-03	PT433	47M-S33	
C87	.01	400	160-0611	BPD-01	DD-103	CUB4S1	811-01	PT4U	47M-S1	
C88	.0047	600	160-0634T	BPD-0047	DD-473	CUB4D47	811-0047	PT6347	57M-D47	
C89	47			N750-D647	TCN-47	N033	N750K-470	NT-5447	97CU-Q47	Note 1, 2
C90	.001	400	160-0631	BPD-001	D6-103	CUB4D1	GIPL-103	PT5D1	57M-D1	
C91	.01	500	160-0641	BPD-01	DD-103	CUB4S1	811-01	PT4U	47M-S1	
C92	.01	400	160-0611	BPD-01	DD-103	CUB4S1	811-01	PT4U	47M-S1	
C93	330	500	163-0330	SU330	D6-331	5W5T33	GIPK-331	DC-5333	1FM-333	
C94	33		163-0033	SU33	D6-330	TP33	GIPK-330	DC-5433	5GA-Q33	
C95	.001	200	160-0631	BPD-001	D6-103	CUB4D1	GIPL-103	PT5D1	57M-D1	
C96	.01	500	160-0641	BPD-01	DD-103	CUB4S1	811-01	PT4U	47M-S1	
C97	.01	200	160-0611	BPD-01	DD-103	CUB4S1	811-01	PT4U	47M-S1	
C98	.001	400	160-0631	BPD-001	DD-102	CUB4D1	GIPL-102	PT5D1	57M-D1	
C99	.01	400	160-0611	BPD-01	DD-103	CUB4S1	811-01	PT4U	47M-S1	
C100	.033	200	160-0612S						47M-S33	
C101	.1	600	160-0601	P888N-1		DP-104	CUB4P1		PT601	47M-P1	
C103	.01	200	160-0611	BPD-01		DD-103	CUB4S1	811-01	PT4U	47M-S1	
C103	.33	400	160-0602S	P488N-223			CUB4P22		PT4022	47M-P22	
C104	1000	2000	160-0603	BPD-30-001	DD30-103	VZD1		3KV-102	DC3031	3GA-D1	
C105	1000		164-1000D	SU000	D6-102	T253	GP2L-102	UC-531	5BK-D1	
C106	.033	400	160-0612S	BPD-03	DD-303	CUB4S33	811-03	PT433	47M-S33	
C107	1000		160-0631	DI-001	DD-102	K069	GP2L-102	UC-521	5GA-D1	
C108	1000		160-0631	DI-001	DD-102	K069	GP2L-102	UC-521	5GA-D1	
C109	.0047	200	160-0634T	S5470M	D6-472	CUB4D47	GP3-433-472	PT6347	57M-D47	
C110	.01	400	160-0611	BPD-01	DD-103	CUB4S1	GP3-333-103	PT4U	47M-S1	
C111	.0033	400	160-0612S			1464-0033		1R5D33	MS-332	
C113	.033	300	160-0612S	BPD-03	DD-303	CUB4S33	811-03	PT4122	47M-S33	
C113	.0047	200	160-0634T	1464-0047		1R5D47		MC1845	MS-247	
C114	470	500	163-0470	1464-0047	D6-471	5R5T47	811-471	MC5245	MS-347	
C115	560	500	163-0560	1464-00056	D6-561	1R5T56	811-561		MS-356	
C116	.001	400	160-0631	SU000	D6-102	CUB4D1	GP2L-102	PT521	57M-D1	
C117	.1	200	160-0601	P388N-1		DP-104	CUB4P1		PT401	27M-P1	
C118	.047	400	160-0614T	BPD-05		DP-503	CUB4S47		PT4147	47M-S47	
C119	.001	600	160-0631	SU000		D6-102	CUB4D1	GP2L-102	PT521	57M-D1	
C120	.047	600	160-0614T	BPD-05		DP-503	CUB4S47		PT5147	67M-S47	
C121	.1	600	160-0601	P888N-1		DP-104	CUB4P1		PT601	67M-P1	

Note 1. Not used in some versions.
Note 2. Some versions may use an 82MMF unit in this application.
† Items C81A, C81B, C81C and R71 are combined in one unit.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYLVANIA PART No	CENTRALAB PART No	CLAROSTAT PART No	IRC PART No	MALLORY PART No	INSTALLATION NOTES
R1A	1Meg		157-0042				UF151	Brightness (Panel)
B	250KΩ						UR2347753 †	Volume-tapped at 100KΩ (Rear)
C	Switch						US-26	Attach to R1B.
R2A	1.5Meg		153-0088	AB-782	A47-1.5Meg-E	Q11-138	TA15L	Tone
B	Shaft		Not Req.	AK-4	KS8-3	Not Req.	Not Req.	Attach to R2A.
R3A	500Ω		153-0048	AB-4	A47-500-S	Q11-103	U-3	Contrast
B	Shaft		Not Req.	AK-4	KS8-3	Not Req.	Not Req.	Attach to R3A.
R4A	25KΩ		153-0041	AB-26	A47-25K-S	Q11-120	SU-29	AGC
B	Shaft		Not Req.	AK-1	FK3-1/4	RQ	Not Req.	Attach to R4A.
R5A	1500Ω		153-0087	AB-8	A47-1500-S	Q11-109	TA15ZL	Vert. Linearity
B	Shaft		Not Req.	AK-1	FK8-1	RQ	Not Req.	Attach to R5A.
R8A	1.5Meg		153-0014	AB-742	A47-1.5Meg-S	Q11-138	TA15L	Height-Note 1
B	Shaft		Not Req.	AK-1	FK8-1	RQ	Not Req.	Attach to R8A.
R7A	1.5Meg		153-0014	AB-742	A47-1.5Meg-S	Q11-138	TA15L	Vert. Hold-Note 2
B	Shaft		Not Req.	AK-1	FK8-1	RQ	Not Req.	Attach to R7A.
R8A	50KΩ		153-0042	BX-31	A47-50K-S	Q11-123	TA54L	Horiz. Hold-Note 3
B	Shaft		Not Req.	Not Req.	FK8-1	RQ	Not Req.	Attach to R8A.
R9A	250KΩ		153-0007	AB-50	A47-250K-S	Q11-130	SU-46	Horiz. Range
B	Shaft		Not Req.	AK-1	FK8-1/4	RQ	Not Req.	Attach to R9A.

Note 1. Chassis 1-533-L, -2 will use an alternate control Part No. 153-0070 in this application.
Note 2. Chassis 1-533-1, -2 will use an alternate control Part No. 153-0078 in this application.
Note 3. Chassis 1-533-1, -2 will use an alternate control Part No. 153-0079 in this application.
† Universal Replacement (Mallory Exact Duplicate Part No. US1378K).

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SYLVANIA PART No	IRC PART No.	NOTES
R10	470KΩ	½	181-0474	BTS-470K	
R11	470KΩ	½	181-0474	BTS-470K	
R12	3300Ω	½		BTS-3300	
R13	6800Ω	½		BTS-6800	
R14	470KΩ	½	181-0474	BTS-470K	
R15	470KΩ	½	181-0474	BTS-470K	
R16	22KΩ	½		BTS-22K	
R17	2300Ω	½		BTS-2300	
R18	180KΩ	½		BTS-180K	
R19	47KΩ	½		BTS-47K	
R20	330Ω	½		BTS-330	
R21	3300Ω	½		BTS-3300	
R22	27KΩ	½		BTS-27K	
R23	2200Ω	½		BTS-220	
R24	3300Ω	½		BTS-3300	
R25	56KΩ	½		BTS-56K	
R26	3300Ω	½		BTS-3300	
R27	18KΩ	½		BTS-18K	
R28	470Ω	½	181-0473	BTS-470	
R29	3900KΩ	5%	181-03945	BTS-390K 5%	
R30	6.7Meg	5%	181-04765	BTS-6.7Meg 5%	
R31	1000Ω	½	181-0103	BTS-1000	
R32	130KΩ	5%	181-01345	BTS-130K 5%	
R33	33KΩ	5%	181-03335	BTS-33K 5%	
R34	1000Ω	½	181-0103	BTS-1000	
R35	1800Ω	5%	181-01825	BTS-1800 5%	
R36	1500Ω	½	181-0152	BTS-1500	
R37	10KΩ	½	181-0103	BTS-10K	
R38	470Ω	5%	181-04705	BTS-47 5%	
R39	1000Ω	½	181-0102	BTS-1000	
R40	2700Ω	½	181-0272	BTS-2700	
R41	1500Ω	½	181-0152	BTS-1500	
R43	10KΩ	½	181-0103	BTS-10K	
R43	470	5%	181-04705	BTS-47 5%	
R44	3300Ω	½	187-0012	PW7-3300	
R45	1500Ω	½	181-0152	BTS-1500	
R46	1000Ω	½	181-0102	BTS-1000	
R47	1000Ω	½	181-0102	BTS-1000	
R48	100Ω	½	181-0101	BTS-100	
R49	1200Ω	½		BTS-1200	Note 1
R50	22KΩ	½	181-0223	BTS-22K	
R51	180Ω	½	181-0181	BTS-180	
R52	68Ω	½	181-0681	BTS-68	
R53	680Ω	½	181-0681	BTS-680	
R54	33KΩ	½	181-0153	BTS-33K	
R55	33KΩ	½	181-0153	BTS-15K	
R56	2700Ω	½	181-0273	BTS-2700	
R57	33KΩ	½	181-0153	BTS-33K	
R58	330KΩ	½	181-0334	BTS-330K	
R59	10KΩ	½	183-0103	BTS-10K	
R60	10KΩ	2	183-0103	BTS-10K	Note 2
R61	15KΩ	½	181-0153	BTS-15K 5%	
R62	1.2Meg	½	181-0125	BTS-1.2Meg	
R63	330KΩ	½	181-0334	BTS-330K	
R64	33KΩ	½	181-0153	BTS-33K	
R65	33KΩ	½	181-0333	BTS-33K	Note 3
R66	22KΩ	½	181-0223	BTS-22K	
R67	1000Ω	½	181-0102	BTS-1000	
R68	10KΩ	½	181-0103	BTS-10K	
R69	1000Ω	½	181-0102	BTS-1000	
R70	330Ω	½	181-0331	BTS-330	
R71	22KΩ	½	† 180-0023	BTS-22K	
R72	22KΩ	½	181-0223	BTS-22K	
R73	22KΩ	½	181-0223	BTS-22K	
R74	15Meg	½	181-0156	BTS-15Meg	
R75	470KΩ	½	181-0474	BTS-470K	
R76	470KΩ	½	181-0474	BTS-470K	

† Items R71, C81A, C81B, C81C are combined in one unit.
Note 1. Some versions use a 1KΩ ½W resistor in this application (Part No. 181-0102).
Note 2. Some versions use a 12KΩ 5% 2W resistor in this application (Part No. 183-01235).
Note 3. Some versions use a 39KΩ ½W resistor in this application (Part No. 181-0393).
Note 4. Some versions use a 18KΩ ½W resistor in this application (Part No. 181-0183).
Note 5. Some versions use a 3300Ω ½W resistor in this application (Part No. 181-0822).
Note 6. Some versions use a 33KΩ ½W resistor in this application (Part No. 181-0333).
Note 7. Some versions use a 27000Ω 5% ½W resistor in this application (Part No. 181-02725); other versions use a 2100Ω 5% ½W resistor in this application.
Note 8. Some versions use a 470KΩ ½W resistor in this application (Part No. 181-0474).
Note 9. Some versions use a 150KΩ ½W resistor in this application (Part No. 181-0154).
Note 10. Some versions use a 3.3Meg ½W resistor in this application (Part No. 181-0335).
Note 11. Some versions use a 56KΩ ½W resistor in this application (Part No. 181-0683).
Note 12. Some versions use a 470Ω ½W resistor in this application (Part No. 181-0472).
Note 13. Some versions use a 33000Ω ½W resistor in this application (Part No. 187-0012).
Note 14. Not used in some versions. Some other versions may use a 1.5Meg ½W resistor (Part No. 181-0155) in this application.

TRANSFORMER (FILAMENT)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SYLVANIA PART No	Halloran PART No	Merit PART No	Stancor PART No.	Thordarson PART No	Triad PART No
T1	117VAC	6.3V	5.3V		141-0064		P3043 ①			F-36A ②
	③ .83A	③ 6A	③ 1.7A							

① Taps 5V winding.
② Parallel and phase 6.3V ③ 5A windings, tape 5V windings.

TRANSFORMER (HALOLIGHT)

ITEM No	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SYLVANIA PART No	Halloran PART No	Merit PART No	Stancor PART No.	Thordarson PART No	Triad PART No
T2	117VAC	880V			141-0065					
	③ 1A				141-0066 ①					

① Used in Models 247301, 247601.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA SYLVANIA PART No	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No	Triad PART No
T3	Horiz. Output Trans.	241-0035	F3619 * 1	HVO-54* 2	2327† 4	A-8255 * 1	A-8255 * 1	FLY-78 * 1	D-69 * ①
		241-0037 ③			2145† 1				
T4	Vert Output Trans	241-0034	Z1900 ②	A-2832 ③	V314 1	A-8167 1	26571 2		
T5A	Yoke(90°)Horiz.(21MH)	100-0023	DF507 ④	MDF-42 ⑤	235D1 ⑥	P-5 ⑦	26571 ⑧	Y-42-1 ⑨	
B	Vert. (46MH)	100-0025 ③							
T6	Width Coil(.4-3.8MH)	132-0007	RJ804 7	MWC-2 7	2060R1 7	20JR15A 7	WC-7 7	WC-23 7	WC-13 7
		132-0010 ③							

1 Drill new mounting hole(s).
2 Connect as auto transformer.
3 Use 6 to 1 turns ratio.
4 Use original core clamp and associated components.
5 Connect horizontal yoke terminal #3 to yoke plug pin 4; horizontal yoke terminal #1 to yoke plug pin #3.
6 Connect horizontal damping network across terminals #3 and #7.
7 Drill new mounting hole or use original slider, clip, and core.
8 Used in chassis serial no. 533108-, 533208- (Chassis Code Change C08).
9 Used in chassis serial no. 533108-, 533208- (Chassis Code Change C09).

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4	9	5	9	5	5	5	3
6	7	4	7	4	4	4	6
2	7	4	7	4	4	4	6
1	1	1	1	1	1	1	1
9	6	7	Term. "D" of 2148†	7	7	7	3
8	2	8	Term. "E" of 2148†	8	8	8	8
Connect Width Coil Across			Terms. "A" & "B" of 2148† across 3 & 1				
Special Notes →	⑩	⑪	⑫	⑬	⑭	⑮	⑯

⑩ Requires 2 turns on filament winding.
⑪ Remove original width coil; capacitor C119; & resistor R134 from circuit.
⑫ If the picture is out of phase, reverse width coil primary or secondary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SYLVANIA PART No	Halldorson PART No	Merit PART No	Stancor PART No	Triad PART No	NOTES
T7	8.5KΩ	3-4Ω	143-0046	Z100T	A3030	A3833	28646	8-53Q

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA SYLVANIA PART No	QUAM PART No	RCA TYPE No	NOTES
SP1	5 1/4"	PM	3-4Ω	539-0078 ①	5SA1	21T61	① Used in Model 21T301.
	4"	PM		539-0403 ②	4A1	3045E	② Used in Models 21C502, 21C601, 21D802, 24C601.
	4"x 6"	PM		539-4602 ③	46A1	3468S	③ Used in Models 21C501, 24T301.
	8"	PM		539-0808 ④	8A3H	3085S	④ Used in Models 21C501, 21C502, 24C601.
	10"	PM		539-1007 ⑤	10A31	2368S	⑤ Used in Models 21C601, 21D802.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	SYLVANIA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	UHF Ant. Coil	0Ω						
L2	UHF Ant. Coil	0Ω						
L3	Osc. Coupling Coil	0Ω						
L4	Osc. Coupling Coil	0Ω						
L5	Fil. Choke	0Ω						
L6	Fil. Choke	0Ω						
L7	Cathode Choke	0Ω						
L8	UHF IF Output	0Ω						Tapped
L9	VHF Ant. Trans	00CT	1Ω					
L10	UHF IF Coil	0Ω						
L11	VHF Ant.Coils	0Ω						
L12	VHF Ant.Coil	0Ω						Channel 13
L13	VHF Ant.Coil	0Ω						Channel 6
L14A	Fil. Choke	0Ω						
B	Fil. Choke	0Ω						
L15	Neut. Coil	0Ω						
L16	VHF RF Coils	0Ω						
L17	VHF RF Coils	0Ω						Channel 13
L18	VHF RF Coils	0Ω						Channel 6
L19	UHF IF Coil	0Ω						
L20	VHF Mixer Grid Coils	0Ω						
L21	VHF Mixer Grid Coil	0Ω						Channel 13
L22	VHF Mixer Grid Coil	0Ω						Channel 6
L23	UHF IF Coil	0Ω						
L24	VHF Osc.Coils	0Ω						
L25	VHF Osc. Coil	0Ω						Channel 13
L26	RF Coil	0Ω						
L27	Conv. Plate	0Ω						
L28	1st Video IF	.3Ω		119-0008				Includes 39.75MC Trap
L29	2nd Video IF	.3Ω	.1Ω	119-0003				Includes 41.25MC Trap
L30	Fil. Choke	0Ω		147-0014				* Microhenries
L31	3rd Video IF	.3Ω	.1Ω	119-0004				† 47.25MC Trap
L32	Fil. Choke	0Ω		147-0016				‡ Microhenries
L33	4th Video IF	.1Ω	.1Ω	119-0005				
L34	Cathode Trap	0Ω	0Ω	119-0011				
L35	5th Video IF	.1Ω	.1Ω	126-0006	IY-5004	TV-135	6324	
L36	Series Peaking Coil	L.2Ω		118-0030				L 6 Microhenries

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SYLVANIA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L37	Shunt Peaking Coil	8.3Ω		131-2026	19-3160		5120	148 Microhenries; Wound on 27KΩ resistor
L38	4.5MC Trap	1.4Ω		118-0022	20-1004	TV-151	1469	
L39	Shunt Peaking Coil			131-2013				Not used in some versions
L40	Series Peaking Coil	10Ω		131-2024	19-3100	TV-181	6177	99 Microhenries
L41	Shunt Peaking Coil	8.2Ω		131-2025				270 Microhenries
L42	Sound IF	1.6Ω		130-0002				Tapped ③ .4Ω
L43	Ratio Det.	12Ω	1.4Ω CT	128-0008				Tertiary Winding =.5Ω
L44	Horiz. Sync Phase Trans.	32Ω	31Ω	243-0001				
L45	RF Choke	1.7Ω		118-0010				9.6 Microhenries
L46	RF Choke	1.7Ω		118-0010				9.6 Microhenries
L47	RF Choke	1.7Ω		118-0010				9.6 Microhenries

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SYLVANIA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L48	48Ω		132-0001	19-1576	TV-163	6210			HS-5	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L49	.360A	22.5Ω	.6HY	145-0019	C5041 ①		C2328 ①		

① Drill one new mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	SYLVANIA PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.360A	517-0010	1021	RS450SL	6S450	5S2	500	
M2	.360A	517-0010	1021	RS450SL	6S450	5S2	500	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SYLVANIA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	C	2 1/2A 250V	191-0022	562-0011	33202.5 (C 2 1/2A)	346017	C 2 1/2	HC 1 3/4-2 1/2
M4	2" Piece #26 Wire							
M5		.25A 250V	191-0023 *	487-0008				

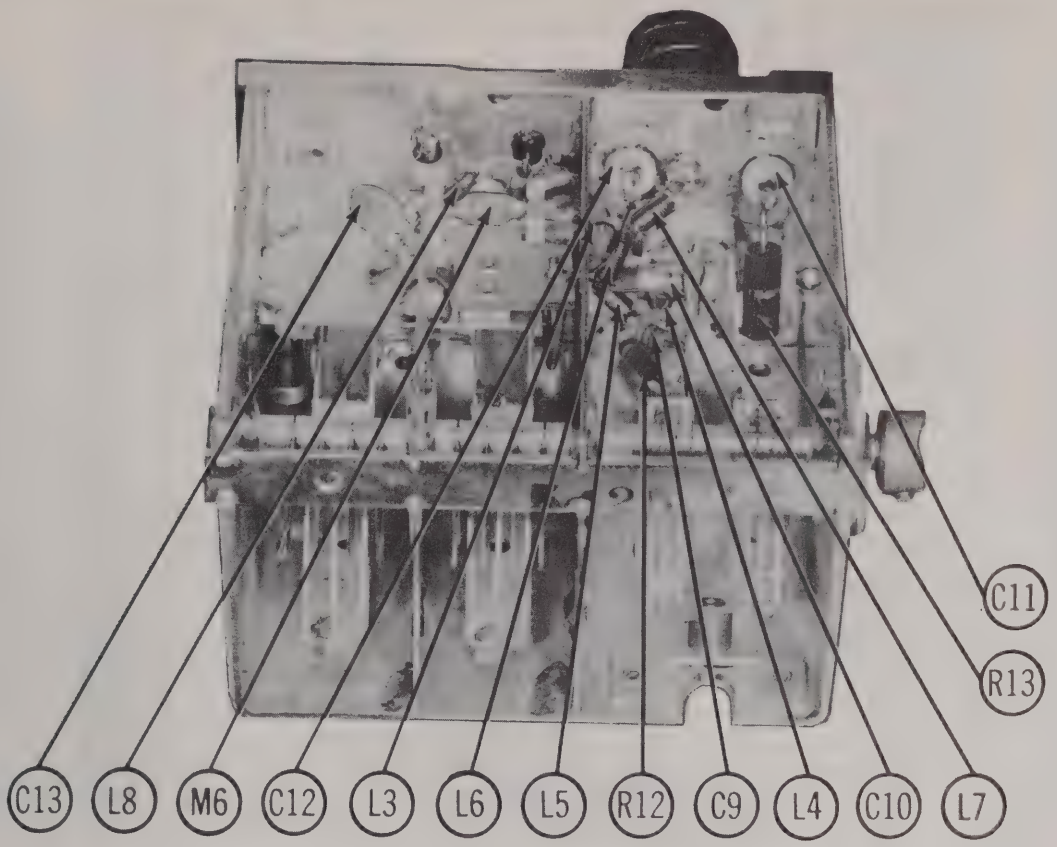
* Used in Chassis 1-533-5 only.

CRYSTAL DIODES

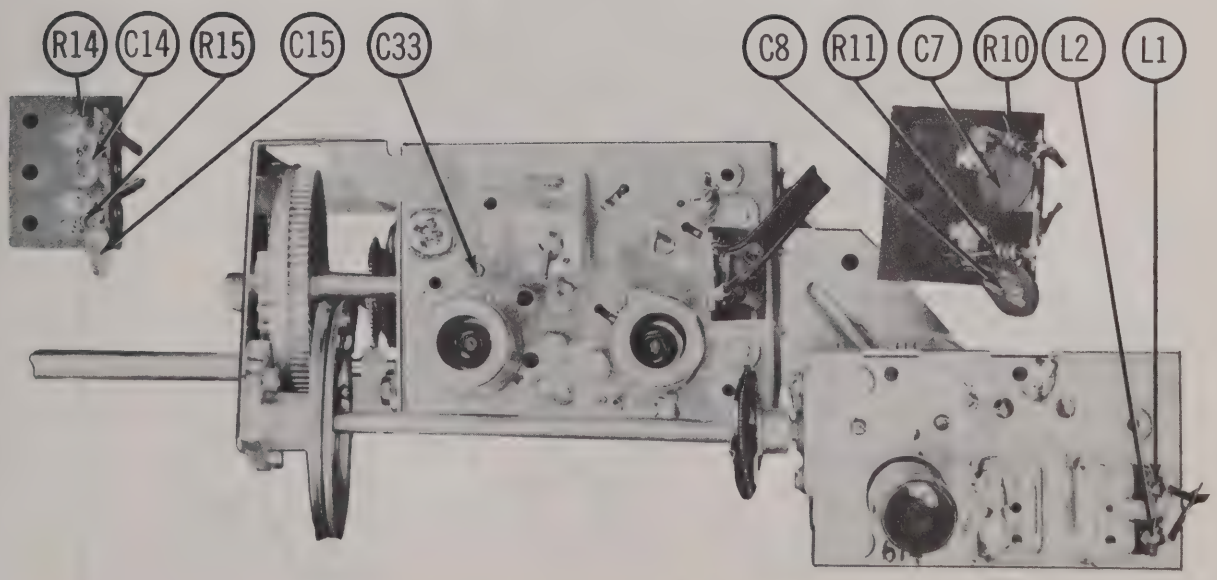
ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		SYLVANIA PART No.	SYLVANIA PART No.	
M6	1N82A	1N82A	1N82A	UHF Mixer (Clip in)

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M7	HaloLight	611-2104	Models 21T201, 21C501, 21C601, 21T301, 21C502, 21D802
	HaloLight	611-2402	Models 24T301, 24C601
M8	Tuner	323-0065	VHF-UHF combination, VHF-UHF models
	Tuner	323-0064	VHF, VHF models only, Chassis 1-533-1, -2
	Tuner	323-0070	VHF, VHF models only, Chassis 1-533-5
M9	Trap	114-0004	VHF Ant. Input Filter
M10	Centering Device	400-0025	
M11	Ion Trap	400-0027	
M12	Correction Magnet		
M13	Correction Magnet		
	Knob	744-0037	Brightness - All models
	Knob	743-0040	VHF channel selector - VHF models only
	Knob	743-0041	VHF-UHF channel selector - VHF-UHF models
	Knob	740-0089	Fine tuning & on-off-volume - All models
	Knob	744-0036	Contrast & tone (Blonde & cherry) - Models 21T201, 21C501, 21C601, 21D802
	Knob	744-0030	Contrast & tone (Blonde, cherry & mahogany - Models 21T301, 21C502, 24T301, 24C601
	Knob	744-0035	Contrast & tone (Mahogany) Models 21T301, 21C501, 21C601, 21D802
	Knob	744-0025	HaloLight control - Models 21T301, 21C502, 21C601, 21D802, 24T301, 24C601
	Knob	714-0071	Rail Assy. (blonde) - Models 21T201, 21C501
	Knob	714-0065	Rail Assy. (blonde & mahogany) - Models 21T301, 21C502
	Knob	714-0068	Rail Assy. (blonde) - Model 21C601
	Knob	714-0069	Rail Assy. (blonde & mahogany) - Models 24T301, 24C601
	Knob	714-0072	Rail Assy. (cherry) - Model 21D802
	Knob	714-0064	Rail Assy. (mahogany) - Models 21T201, 21C501
	Knob	714-0067	Rail Assy. (mahogany) - Models 21C601, 21D802
	Safety Glass	710-0018	Models 21T201, 21C501
	Safety Glass	710-0024	Models 21T301, 21C502, 21C601, 21D802
	Safety Glass	710-0020	Models 24T301, 24C601
	Mask	716-0024	Models 21T201, 21T301, 21C501, 21C502, 21C601, 21D802
	Mask	716-0025	Models 24T301, 24C601



UHF TUNER BOTTOM VIEW

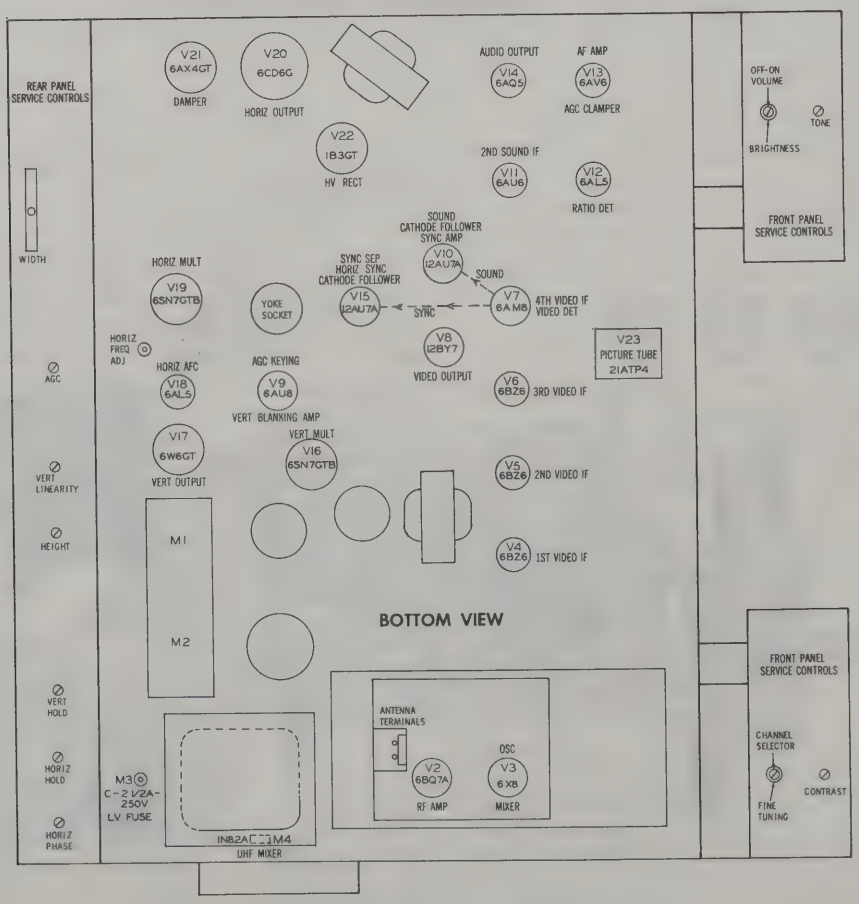


TUNER ASSEMBLY TOP VIEW

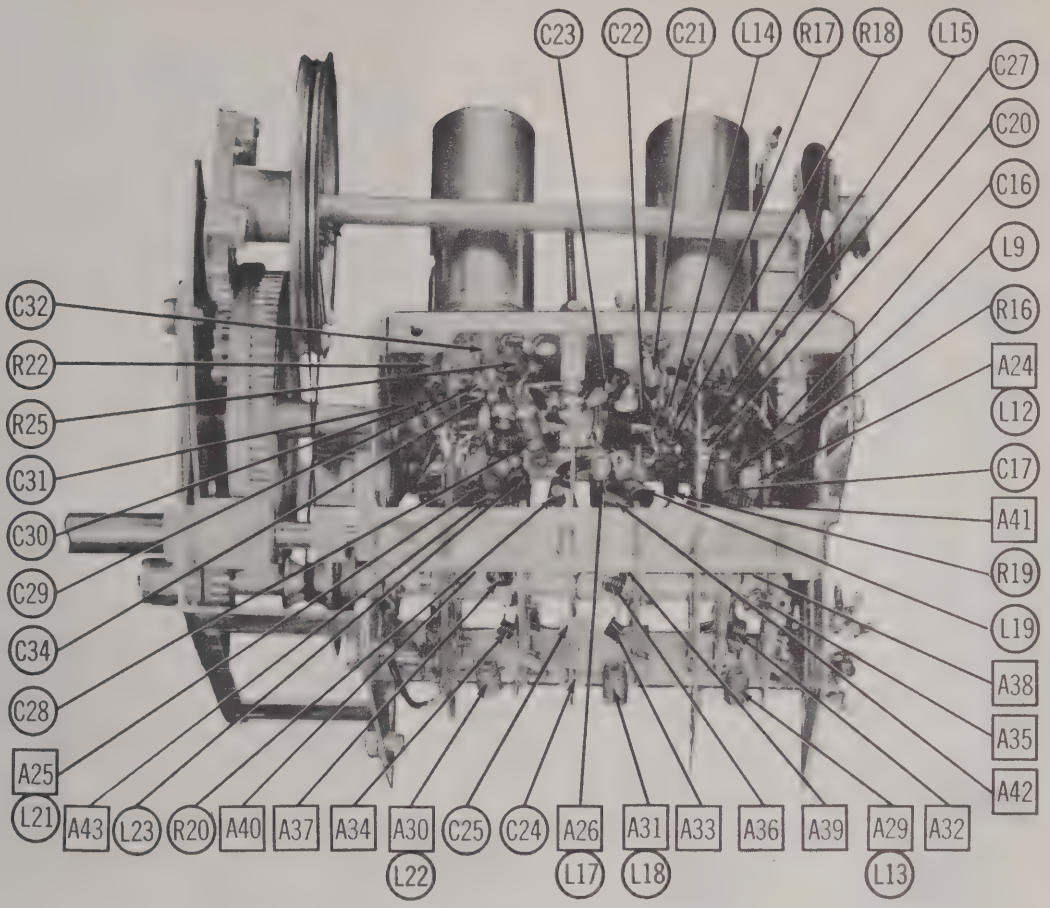
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6T4	*† 10KΩ	8. 2KΩ	0Ω	. 1Ω	0Ω	8. 2KΩ	*† 10KΩ		
V 2	6BQ7A	INF	600KΩ	0Ω	0Ω	. 1Ω	† 500Ω	100KΩ	INF	0Ω
V 3	6X8	0Ω	27KΩ	† 6. 5KΩ	0Ω	. 1Ω	0Ω	56KΩ	† 20KΩ	† 6. 5KΩ
V 4	6BZ6	35KΩ	47Ω	. 1Ω	0Ω	† 4. 8KΩ	† 13KΩ	0Ω		
V 5	6BZ6	35KΩ	47Ω	. 1Ω	0Ω	† 4. 8KΩ	† 13KΩ	0Ω		
V 6	6BZ6	. 1Ω	180Ω	. 1Ω	0Ω	† 4KΩ	† 5KΩ	0Ω		
V 7	6AM8	330Ω	. 1Ω	† 4. 4KΩ	. 1Ω	0Ω	† 3. 7KΩ	. 1Ω	2. 7KΩ	0Ω
V 8	12BY7	55Ω	2. 7KΩ	0Ω	0Ω	0Ω	. 1Ω	† 3. 5KΩ	† 3KΩ	0Ω
V 9	6AN8	▲ 800KΩ	1Meg	33KΩ	0Ω	. 1Ω	150KΩ	† 33KΩ	† 70KΩ	† 9KΩ
V 10	12AU7A	† 7KΩ	11KΩ	. 4Ω	. 1Ω	. 1Ω	† 40KΩ	4Meg	3. 9KΩ	0Ω
V 11	6AU6	1. 6Ω	0Ω	0Ω	. 1Ω	† 1KΩ	†113KΩ	100Ω		
V 12	6AL5	INF	INF	. 1Ω	0Ω	0Ω	0Ω	22KΩ		
V 13	6AV6	15Meg	0Ω	0Ω	. 1Ω	500KΩ	0Ω	† 470KΩ		
V 14	6AQ5	470KΩ	270Ω	. 1Ω	0Ω	† 1KΩ	† 500Ω	470KΩ		
V 15	12AU7A	† 17KΩ	2. 5Meg	0Ω	0Ω	0Ω	† 10KΩ	1Meg	32Ω	. 1Ω
V 16	6SN7GTB	10KΩ	† 47KΩ	1KΩ	650KΩ	▲ 700KΩ	1KΩ	. 1Ω	0Ω	
V 17	6W6GT	NC	. 1Ω	† 450Ω	† 550Ω	1. 3Meg	NC	0Ω	300Ω	
V 18	6AL5	100KΩ	100KΩ	. 1Ω	0Ω	4. 8Meg	0Ω	4. 8Meg		
V 19	6SN7GTB	10Meg	† 7. 5KΩ	820Ω	100KΩ	† 50KΩ	820Ω	. 1Ω	0Ω	
V 20	6CD6GA	TP	0Ω	0Ω	TP	700KΩ	NC	. 1Ω	† 8KΩ	TOP CAP ▲ 35Ω
V 21	6AX4GT	NC	TP	400KΩ	NC	† 25Ω	TP	. 1Ω	0Ω	
V 22	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲ 625Ω
V 23	21ATP4	† 3KΩ	† 250KΩ	PIN 6 ▲ 120KΩ	PIN 10 ▲ 800KΩ	PIN 11 † 250KΩ	PIN 12 † 3KΩ			

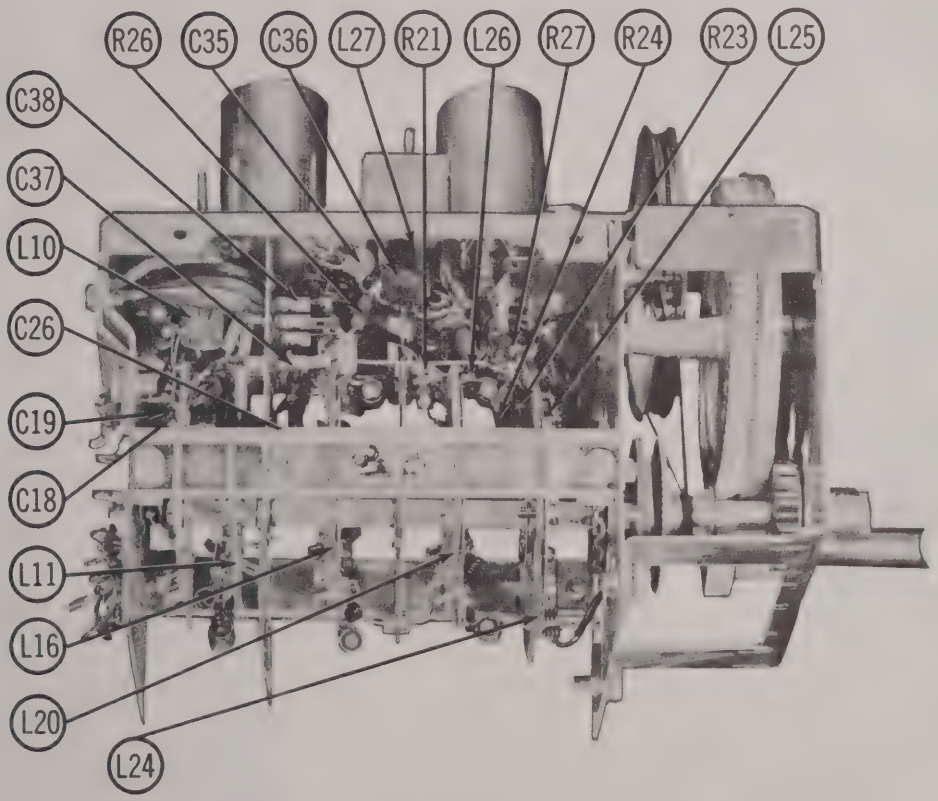
* MEASURED IN "UHF" POSITION.
† MEASURED FROM OUTPUT OF M1.
▲ MEASURED FROM PIN 3 OF V21.
NC-NO CONNECTION.
TP-TIE POINT.



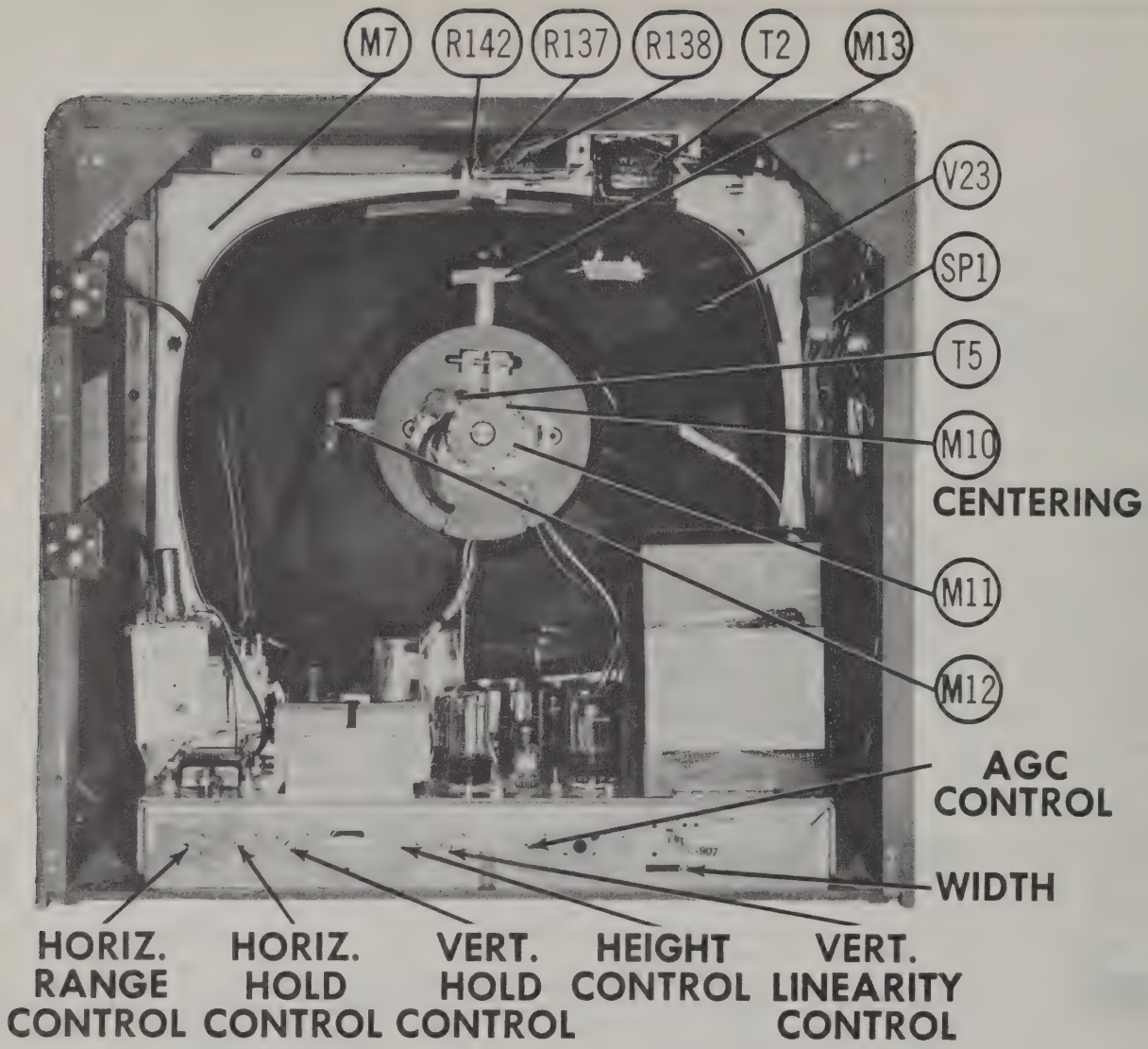
TUBE PLACEMENT CHART



VHF TUNER-RIGHT SIDE



VHF TUNER-LEFT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station.

Adjust the width slug (B2) for picture slightly wider than necessary to fill the picture mask horizontally.

To adjust the horizontal AFC circuit proceed as follows:

1. Short pin 8 (cathode) of 12AU7A/V15 to chassis with a clip lead.

2. Connect a jumper across the terminals of horizontal frequency coil (L48).

3. Set the horizontal hold control to its mid-range position.

4. Adjust the horizontal range control until the picture moves back and forth across the screen with the blanking bar vertical.

5. Remove the short from L48. Adjust the horizontal frequency slug (B1) until the picture moves back and forth across the screen with the blanking bar vertical.

6. Remove the short from pin 8 of V15.

7. Set contrast control fully counter clockwise and turn the horizontal hold control for best lock-in action.

8. Set the contrast control for normal picture and check for proper lock-in action on all available channels. If necessary, SLIGHTLY readjust the horizontal hold control.

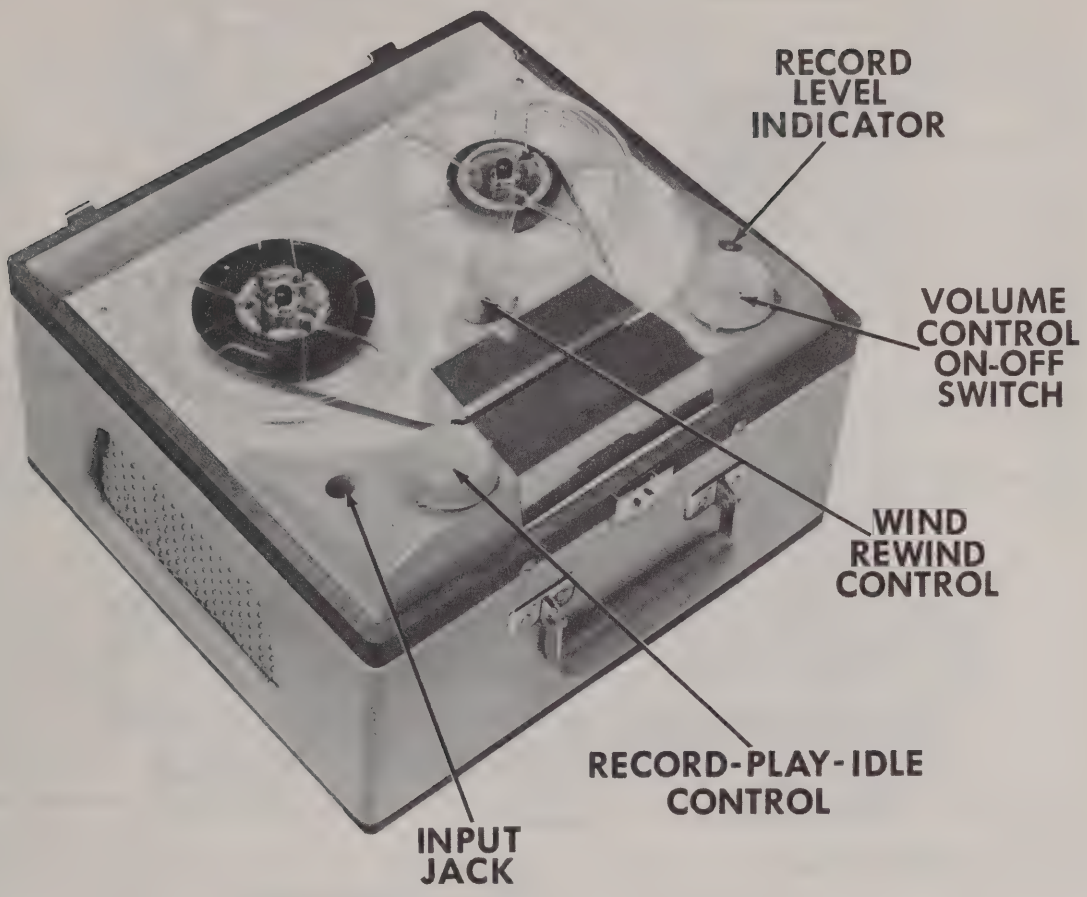


Figure 1

GENERAL INFORMATION

The Telectro Model 556 is designed to record and play back two tracks of material on standard width recording tape, which doubles the playing time of a 3" or 5" reel with no loss of frequency response or quality. Recordings can be made from a radio, television receiver or phonograph, in addition to those made directly from the microphone. A high speed wind and rewind lever is located in the center of the upper plate. The Telectro is supplied complete with microphone and 6 foot cord, one empty and one full reel of Type "A" tape, 6 foot power cord, and instruction book.

This recorder has a tape speed of 3 3/4" per second. Using both tracks, the total recording time for a 5" reel of tape is one hour.

The Model 556 is designed to operate on 60 cycle, 105-125 volts, AC supply only.

Manufactured by:

Telectrosonic Corporation
35-18 37th Street
Long Island City, N. Y.

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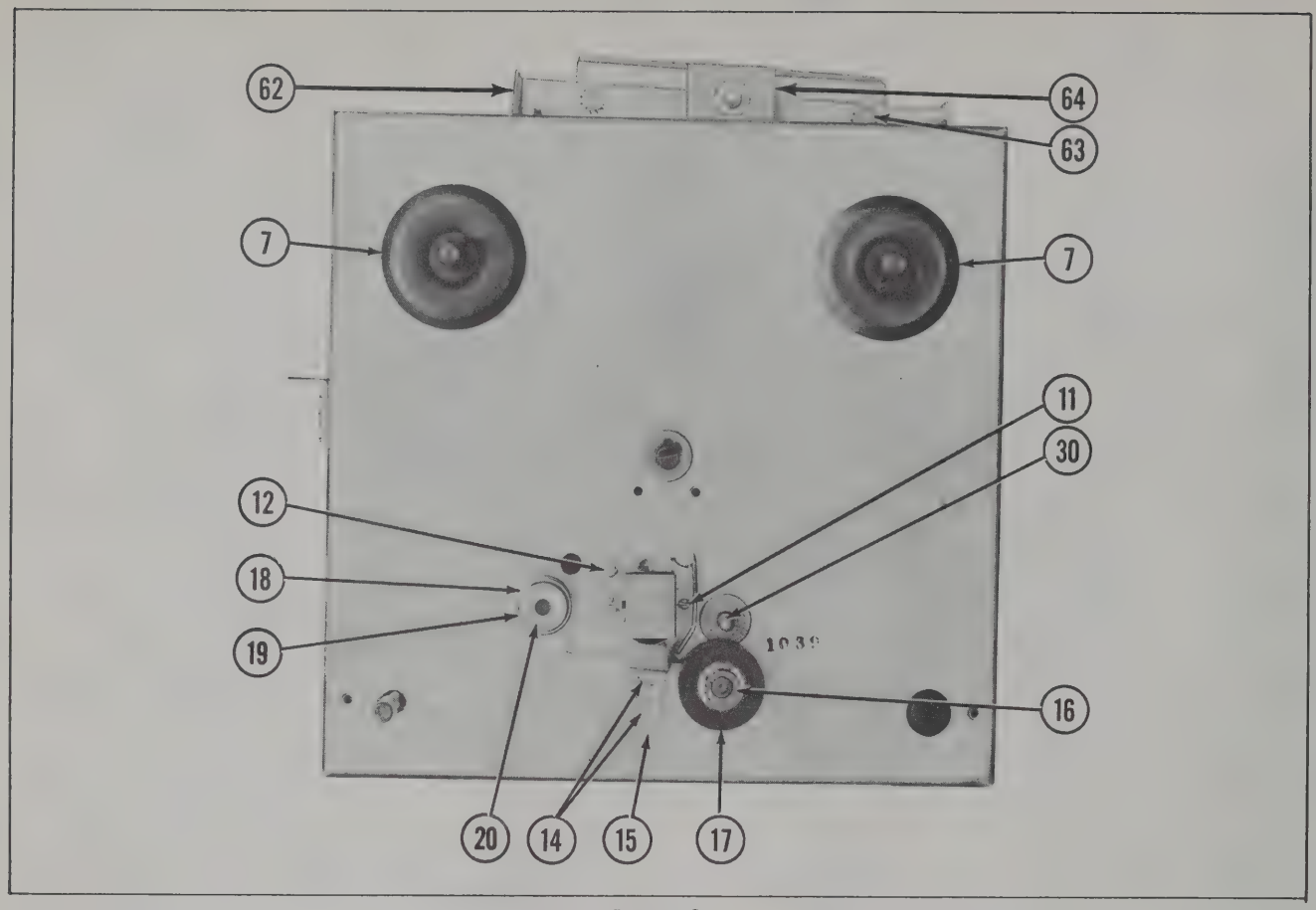


Figure 2

SPECIFICATIONS

Size - Portable Unit-
7 1/2" x 11" x 11 5/8"

Weight-
Approximately 16 lbs.

Case-
Airplane cloth luggage carrying case, two - tone.

Tape Speed-
3 3/4" per second.

Tracks-
Dual.

Reel Size-
5" maximum.

Tape Wind-
Type "A".

Track Selection-
Manual turnover.

Recording Time-
1 hour at 3 3/4" per second (1/2 hour each track).

Head Alignment Provision-
Yes.

Inputs-
Microphone, radio, television, and phonograph - panel jack.

Record Volume Indicator-
Neon type.

Tube Complement-
12AX7 - Amplifier, 12AX7-AF Amplifier, Bias Oscillator, 50C5 - Audio Output, 35W4 - Rectifier.

OPERATING INSTRUCTIONS

Threading The Tape-

With the "Rec - Play - Idle" control in "Idle" position, place an empty reel on the right hand (take-up) spindle. Place a full reel of tape on the left hand (supply) spindle so that the tape will lead off in a counter-clockwise direction. Remove approximately twelve inches of tape from the supply reel for ease of threading the machine. Hold a section of tape straight with both hands and insert the tape into the tape slot. Insert the free end of the tape into one of the hub slots on the take-up reel, then wind the reel one or two times counter-clockwise to secure the tape and to take up all slack.

NOTE: Extreme caution should be taken in the threading of the machine to avoid putting a twist in the tape. Also make certain the smooth (or plastic) side of the tape is facing the front of the recorder.

To Record-

Plug the line cord into a convenient wall receptacle and insert the microphone plug into the "Input Jack" located on top of the recorder. Turn power on

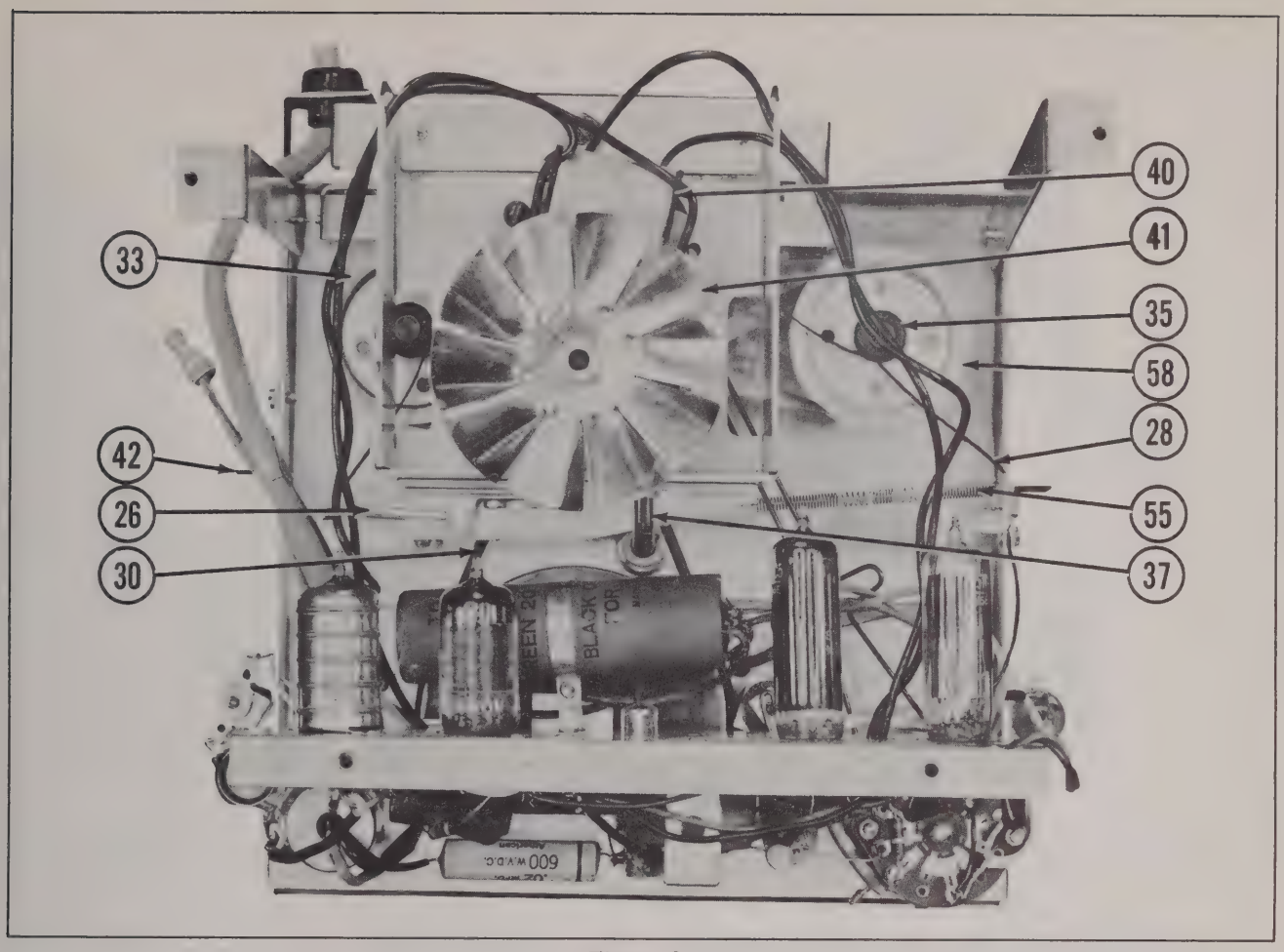


Figure 3

by turning "On-Off-Volume" control clockwise until a click is heard, and allow approximately one minute for warm-up. Thread tape as described under "Threading The Tape". Turn "Rec - Play - Idle" control to "Record" position. Adjust "Volume" control until "Recording Level Indicator" flashes on high peaks only. To record from radio, phonograph, or television, follow same procedure as above, keeping volume of appliance at a normal level. To stop movement of tape, turn "Rec - Play - Idle" control to "Idle" position.

To Wind Or Rewind Tape-

Turn power on. Turn "Rec - Play - Idle" control to "Idle" position. Rewind tape by holding "Wind-Rewind control knob to the left (Rewind position) and hold. Releasing this control will automatically stop movement of tape.

To Play Recordings-

Turn power on. Allow approximately one minute for warm-up. Turn "Rec - Play - Idle" control to "Play" position. Adjust "Volume" control for desired listening level. To stop movement of tape, turn "Rec - Play - Idle" control to "Idle" position.

CAUTION: Do not set "Rec - Play - Idle" control to "Record" position when "Play" is desired. In "Record" position previously recorded portion of tape is automatically erased.

To Edit And Splice Tape-

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings which are to be edited should be limited to one track only.

1. The tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements may be inserted between selections etc. Unused sections of tape can be spliced together for re-use.

2. Cut tape at a 60^{o} angle with an overlap so ends will line up. (Cutting tape at 60^{o} angle will eliminate detection of splice on recording.)

3. Align both ends of tape, glossy side up. Cover aligned ends with splicing tape, evenly and securely, and trim off any excessive width.

Dual Track Recording-

The Telectro is designed so that only 1/2 the tape width is recording at a time; thereby resulting in two track recording. This two track operation is accomplished in the following manner:

1. After a reel of tape has been recorded; i.e all the tape wound onto the right reel, turn "Rec - Play - Idle" control to "Idle" position.

2. Remove the reels from the recorder, turning the full reel over and placing it on the left spindle.

3. Properly thread the tape and proceed with the recording.

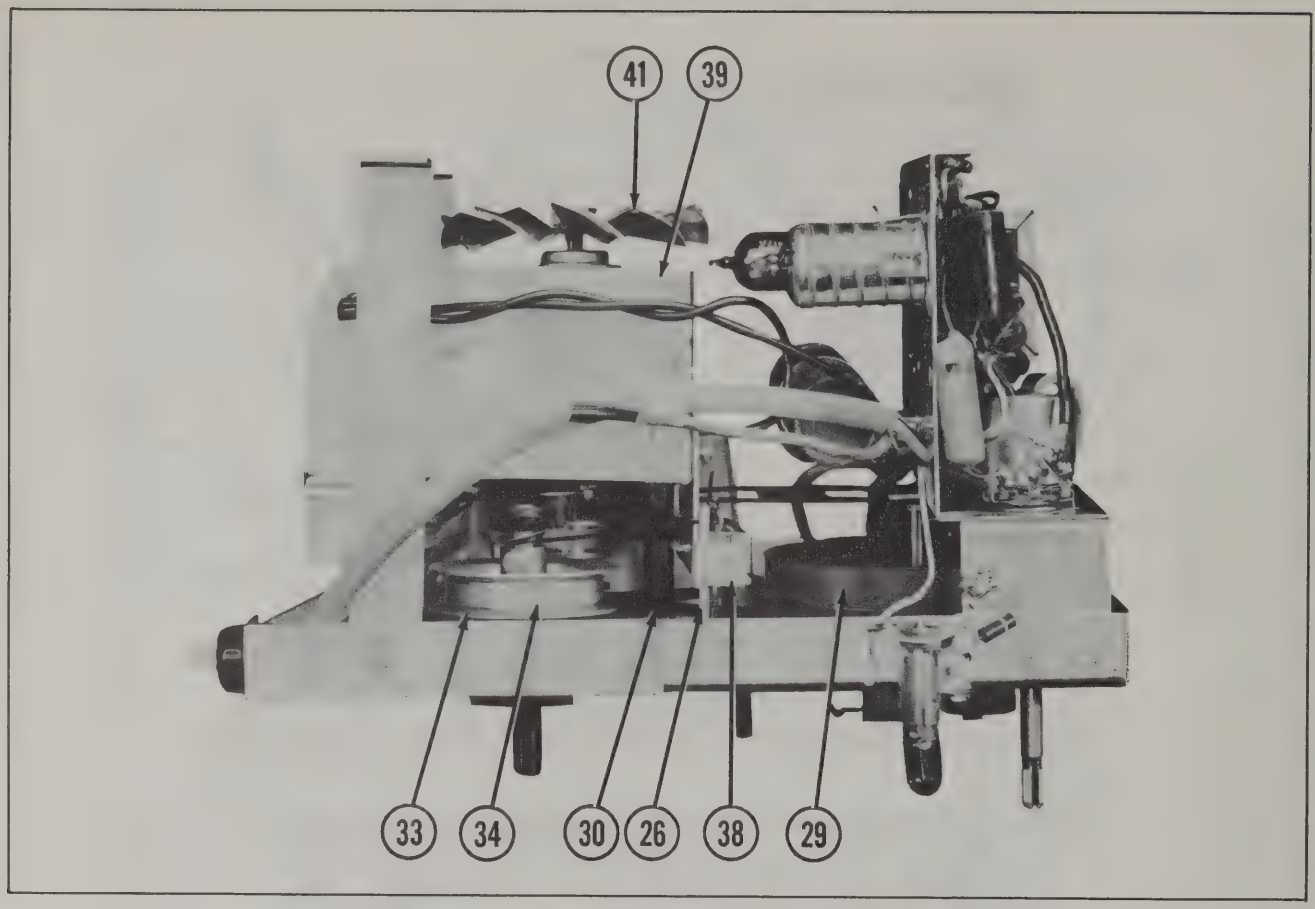


Figure 4

4. After the second track has been recorded the first track of recording is ready to be played, without rewinding, by reversing the reels as described in Step #2 above.

ADJUSTMENTS

Soundhead Assembly Adjustment-

To adjust the play-record head for maximum frequency response, make the following adjustment.

1. Remove rear cover plate (4).

2. Properly thread an alignment tape or a good recorded tape on the recorder.

3. Set the controls as described "To Play Recording".

To adjust the head for the maximum frequency response, adjustment screw (11) should be either screwed in or out. This moves the head from side to side slightly until the maximum high frequencies are obtained.

4. Replace the rear cover plate (4).

Switch Cam (53) Adjustment-

Cam (53) should be adjusted so that the erase magnet (20) faces the front when the unit is in "Record" position. Adjust by loosening set screw in cam (53) and move the cam until the above condition exists. When properly adjusted in the "Record" position, the "Play - Idle" position will be correct.

Erase Head Adjustment-

Erase head (20) should be adjusted so that the erase magnet effects only the top half of the recorded tape. This adjustment should be made in the "Record" position only, and is made by loosening a set screw located in the erase head and moving erase head up or down till only the top half of the tape is effected. When properly adjusted only the top half of the tape will be erased at a time.

Brake Adjustment-

Brake cord (28) should be adjusted so that there is no movement of tape when threaded, while in the "Idle" position. If adjustment is required, loosen screw (45) and tighten cord (28) to obtain the above results.

NOTE: If power is turned on and tape is not threaded, the tape reel spindle may revolve even through function control is in "Idle" position. This is normal. Spindles will not revolve if tape is threaded.

Brake Release Bracket Adjustment-

Bracket (62) should be adjusted so that when "Wind - Rewind knob (2) is used, brake cord (28) is released. To obtain this results loosen two screws (63) and move bracket either forward or backward.

TROUBLES

Fails To Erase-

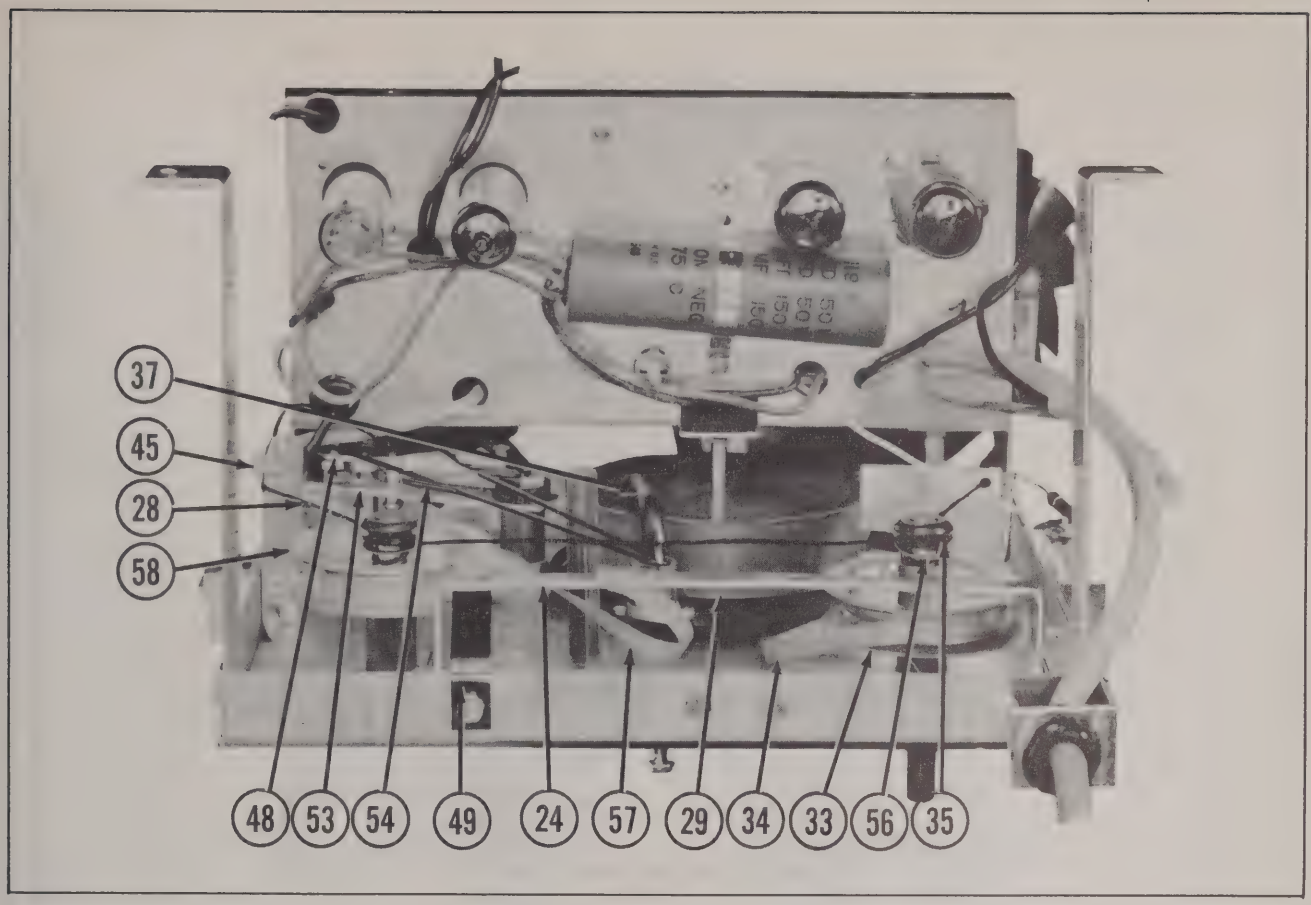


Figure 5

1. Set screw in erase head (20) loose causing head to remain in "Play" or "Idle" position.

2. Erase head actuating cam (53) not adjusted properly. See "Switch Cam (53) Adjustment".

Fails To Record-

1. Tape pressure pad not adjusted properly, resulting in the tape not being held against the recording head. Adjust pressure pad screws (14) just enough to hold tape firmly against recording head.

2. Check recording head connections.

3. Check amplifier for faulty components.

No Drive On Record Or Playback-

1. Rubber drive belt (30) loose or broken.

2. Take-up belt (34) loose or broken.

3. Defective motor.

4. Connecting leads fouling motor fan.

5. Flywheel and capstan shaft (29) binding.

Speed Variation Or "Wow"-

1. Check capstan (29), pressure roller (17), and motor pulley for oil or foreign material. Clean with soft cloth and carbon tetrachloride.

2. Check adjustment of brake cord (28).

No Wind Or Rewind-

1. Drive belt (30) loose or broken.

2. Belt (34) or (57) loose or broken.

3. Check for oil or grease on driving surfaces. Clean with soft cloth and carbon tetrachloride.

LUBRICATION

All moving parts of this recorder are located in self lubricated oilite bearings, therefore, in normal use, no lubrication is necessary. When unit is disassembled for repair, clean all bearings with a clean soft cloth and apply a thin film of oil on bearings surface.

CLEANING

The pressure roller (17), capstan shaft (29) and play-record head (10) are subject to a coating of tape oxide which is worn off the tape as it passes these parts. This condition will cause poor performance and should be removed occasionally with a soft cloth and carbon tetrachloride.

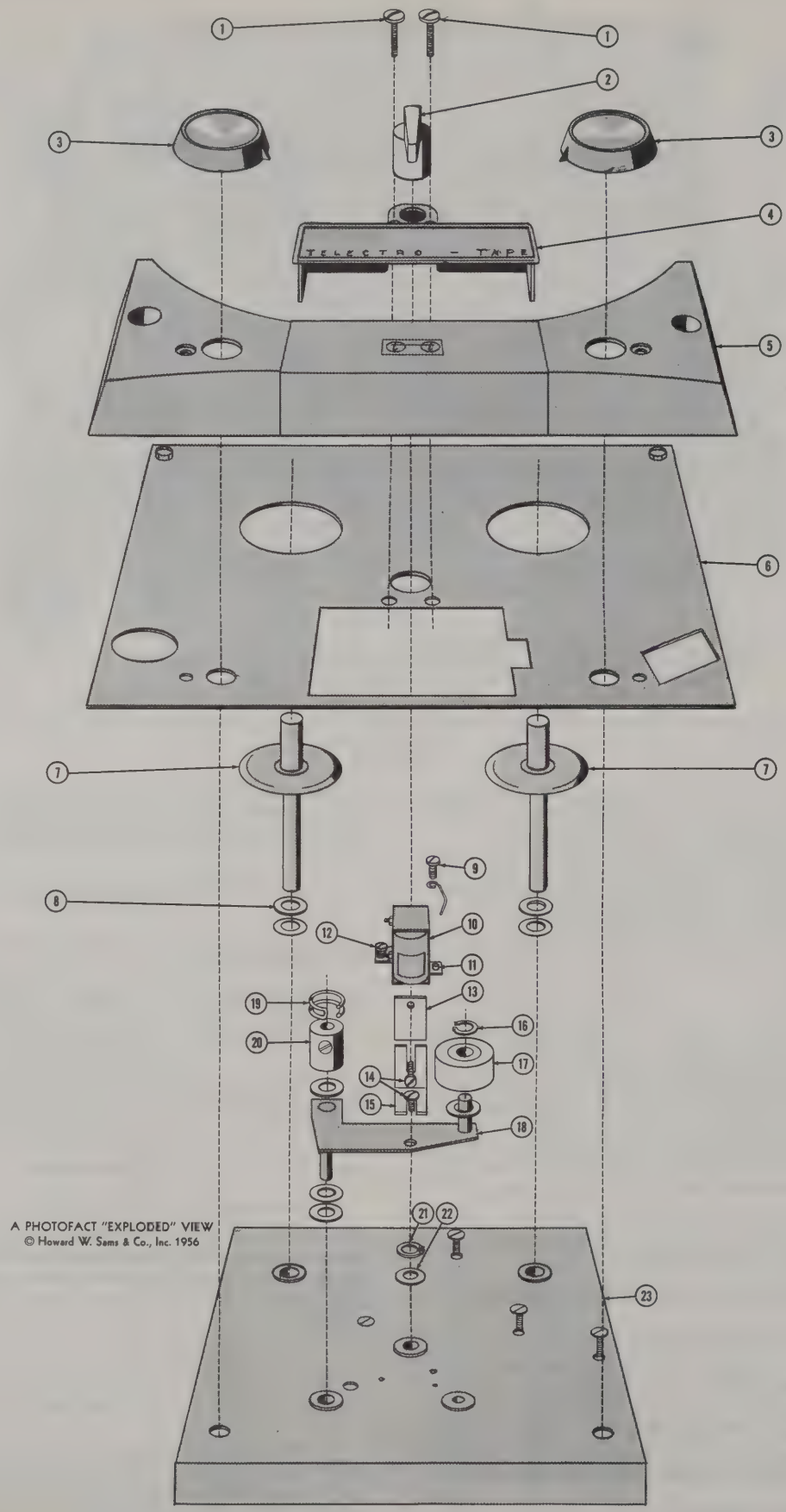
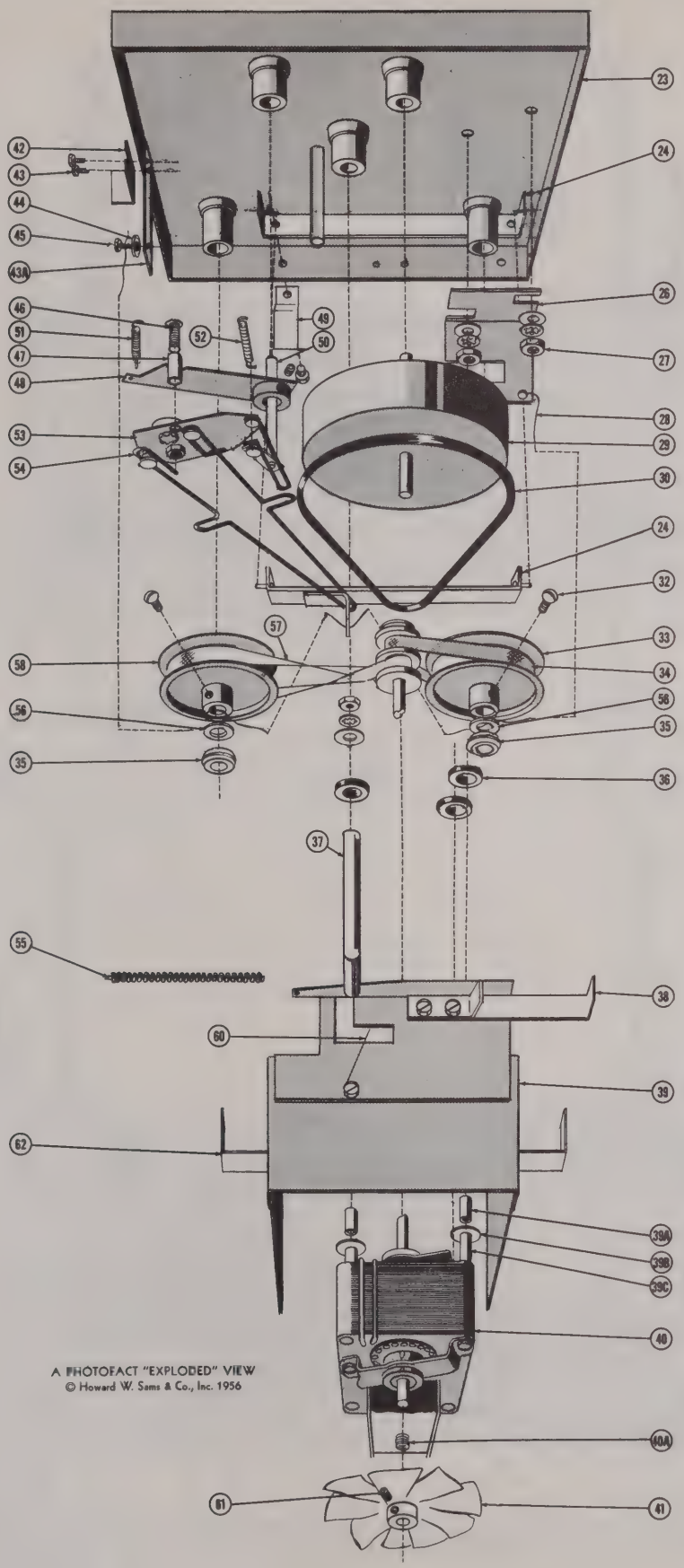


Figure 6A. Exploded View Of Parts Above Baseplate.



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DENVER, COLORADO

Figure 6B. Exploded View Of Parts Below Baseplate.

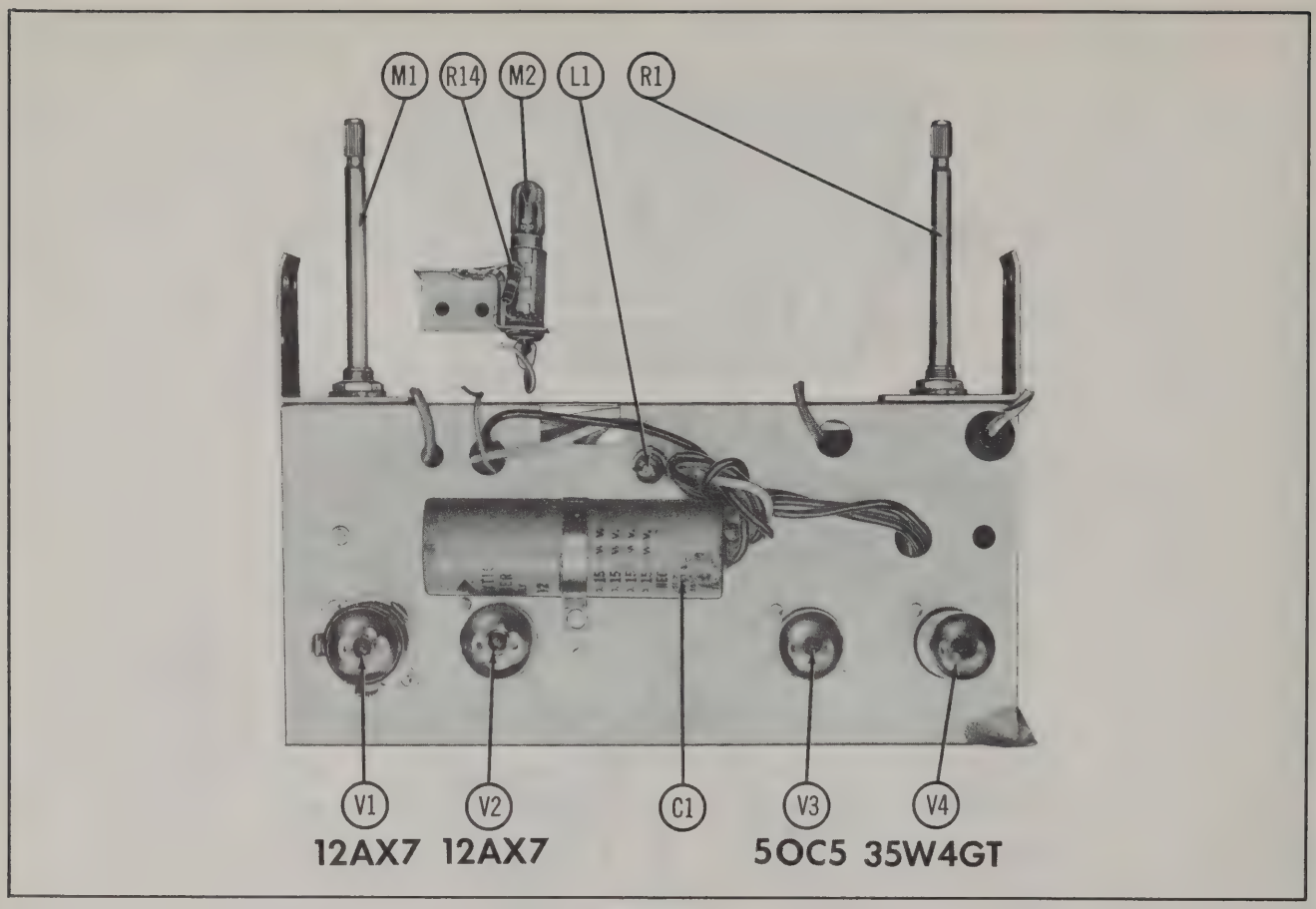


Figure 7

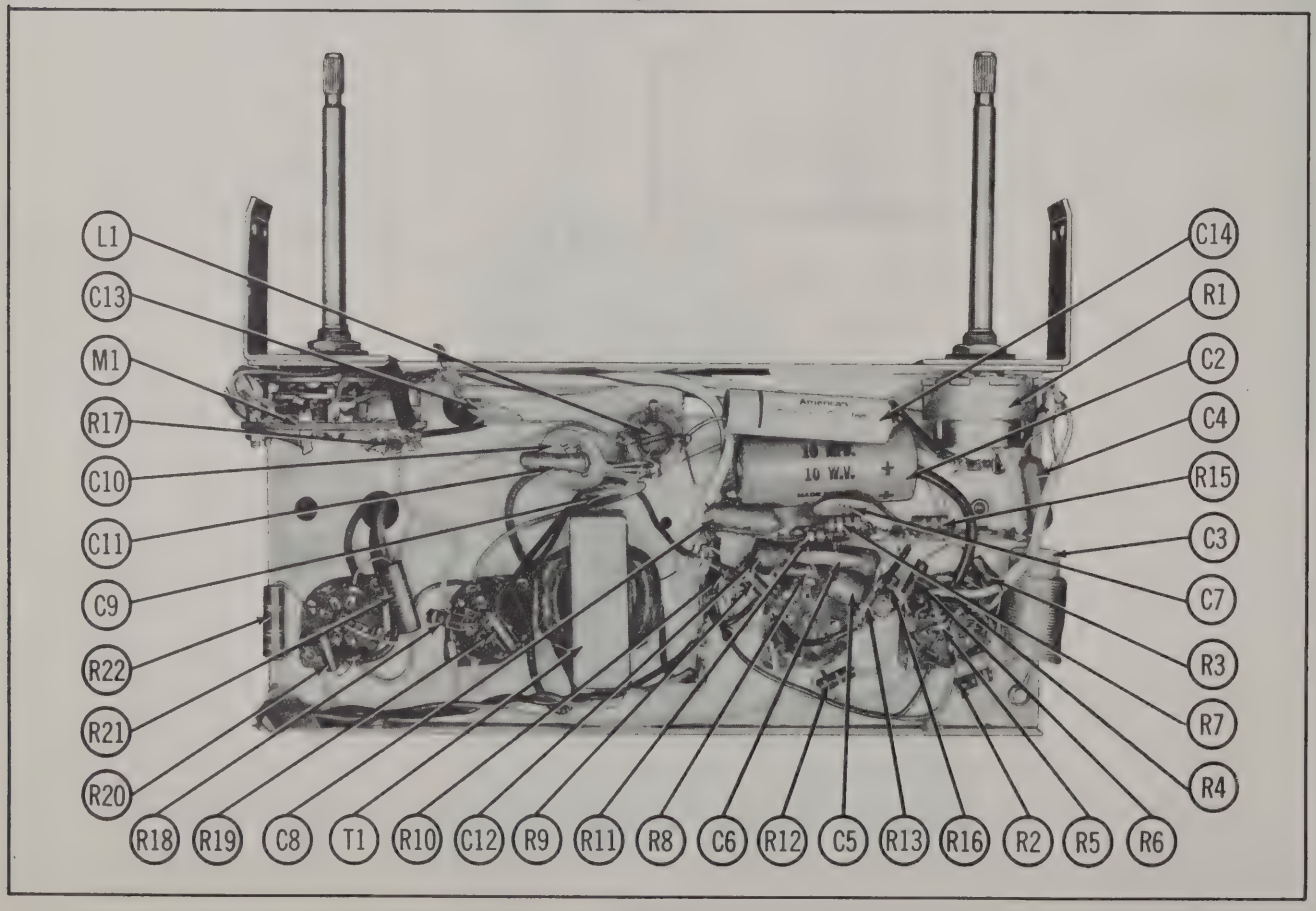
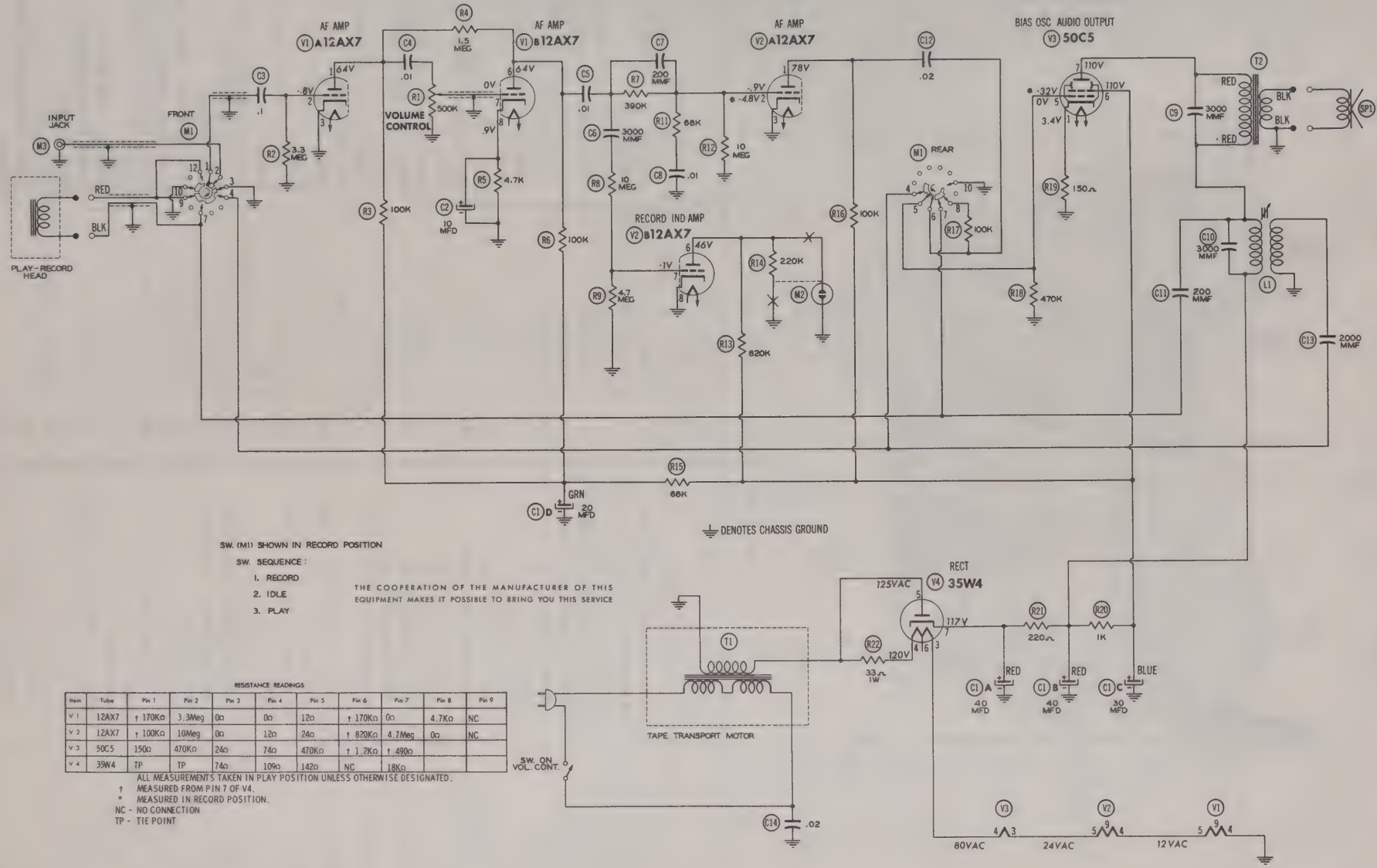


Figure 8



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	† 170KΩ	3.3Meg	0Ω	0Ω	12Ω	† 170KΩ	0Ω	4.7KΩ	NC
V 2	12AX7	† 100KΩ	10Meg	0Ω	12Ω	24Ω	† 820KΩ	4.7Meg	0Ω	NC
V 3	50C5	150Ω	470KΩ	24Ω	74Ω	470KΩ	† 1.2KΩ	† 490Ω		
V 4	35W4	TP	TP	74Ω	109Ω	142Ω	NC	18KΩ		

ALL MEASUREMENTS TAKEN IN PLAY POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM PIN 7 OF V4.
* MEASURED IN RECORD POSITION.
NC - NO CONNECTION
TP - TIE POINT

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319-14

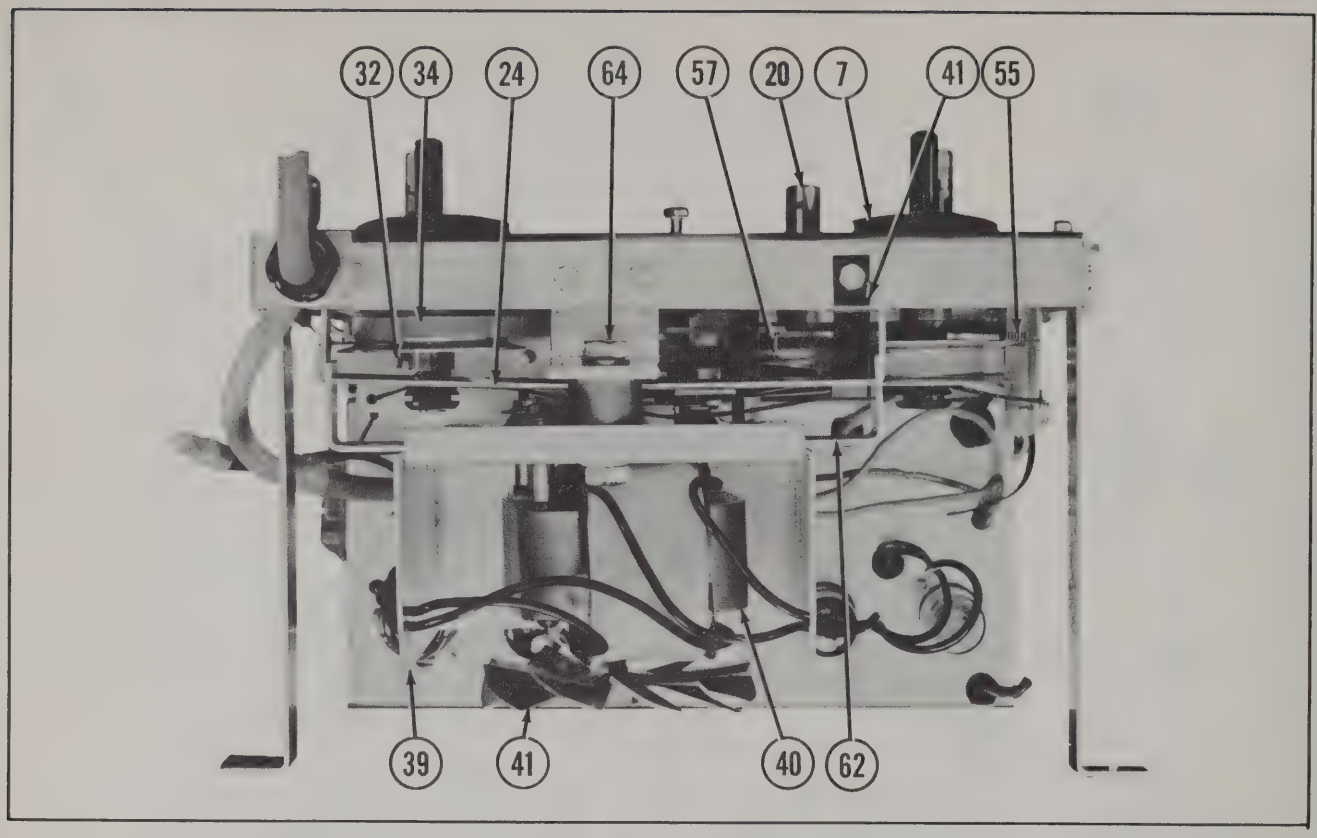


Figure 9
MECHANICAL PARTS LIST

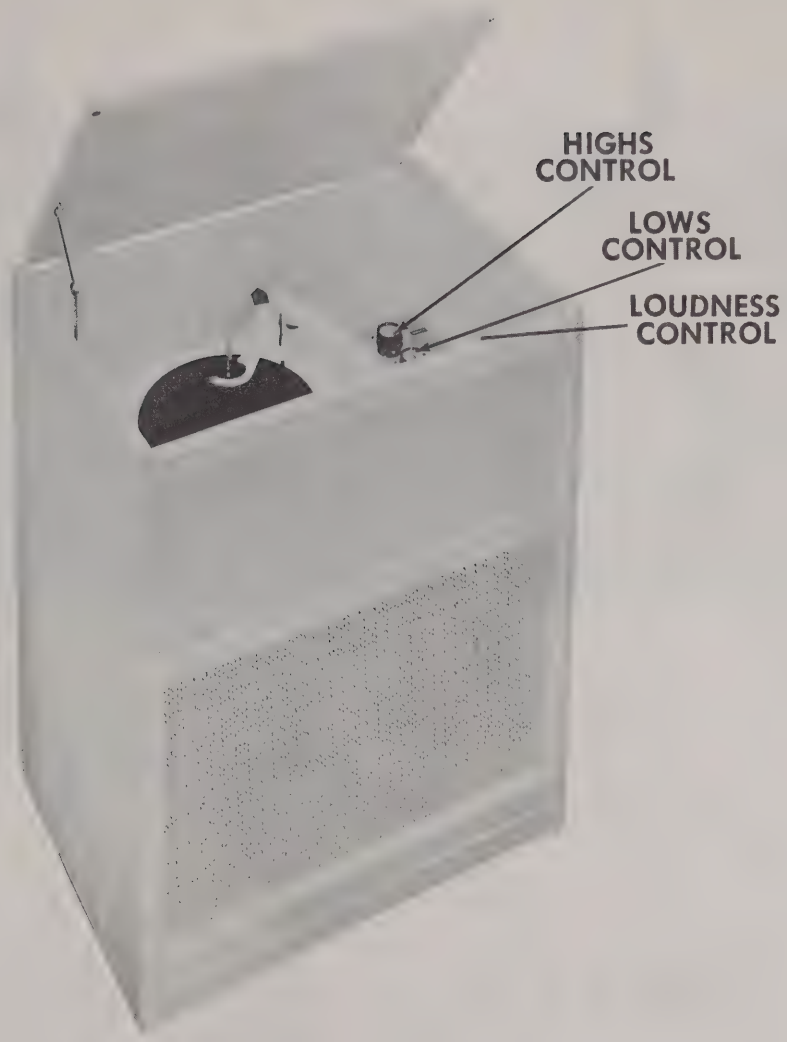
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	#6-32 x 3/4	Rear Cover Plate Screw	31	#811-T1	Cup Washer
2	TK-192	Wind-Rewind Knob	32	#6-32 x 3/16 RH	Set Screw
3	TK-191	Function Knobs	33	TA-265	Take-Up Reel Pulley
4	ES-TE-216	Rear Escutcheon Assy.	34	TB-660	Cloth Take-Up Belt
5	EL-TE-215	Front Escutcheon Assy.	35	TG-220	Brake Support Grommet
6	TP-612	Dress Plate	36	TM-274	Vibration Mounts
7	TA-676	Spindle	37	TL-263	Wind-Rewind Control Shaft
8	T-524	Spindle Bearing	38	TH-425	Excursion Limit Bar
9	#4-40 x 7/16	Tape Guide Screw	39A	TS-1165	Motor Shock Mount Spacer
10	SH-TH-293	Soundhead Assembly	39B	TS-1275	Motor Mounting Spacer
11	#4-40 x 7/16	Play-Record Head Adjustment Screw	39C	TS-1276	Motor Mounting Spacer
12	#4-40 x 7/16	Play-Record Head Compression Screw	40	TM-273	Motor
13	P-TP-610	Pressure Pad Mounting Plate	40A	TS-1357	Adapter Bushing Spring
14	#4-40 x 3/16	Pressure Pad Adjustment Screws	41	F-TF-258	Fan Assembly
15	TB-618	Pressure Pad Adjustment Plate	42	TB-700	Drop Bracket
16	TR-280	Retaining Ring	43	#6 x 3/8, PKDR	Screws
17	TA-587	Capstan Roller Assembly	43A	TP-619	Brake Retainer Plate
18	CP-TP-622	Capstan Plate Assembly	44	#6	Washer
19	TG-347	Tape Guide	45	#6 x 5/6, PKDR	Cord Adjustment Screw
20	E-TH-423	Erase Head	46	#6-32 x 9/16	Cam Roller Screw
21	TR-266	Retaining Ring	47	TR-626	Cam Roller
22	1/4 x 1/2 x .010	Washer	48	CR-TC-1128	Play-Record - Idle Lever
23	MB-TB-623	Baseplate	49	TS-1163	Pivot Bar Tension Spring
24	BB-TB-741	Brake Bridge Assembly	50	PE-TC-1136	Erase Head Actuating Shaft
26	TB-619	Excursion Limit Bracket	51	TS-1240	Capstan Cam Spring
27	#6-32 x 5/16 AF	Hex Nut	52	TS-1201	Erase Head Actuating Shaft Spring
28	#811-NC	Brake Cord	53	SC-TC-1129	Switch Cam
29	TF-256	Flywheel & Capstan	54	TW-340	Brake Release Actuator Spring
30	TO-171	Rubber Drive Belt	55		
			56		Washer

MECHANICAL PARTS LIST (Cont.)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
57	TB-661	Cloth Rewind Belt	61	#6-32 x 3/16	Fan Set Screw
58	TA-265	Supply Reel Pulley	62	TB-631	Brake Release Bracket
60	TS-1239	Wind-Rewind	63	#8 x 3/8 PK	Screws
			64	TB-637	Bearing Bracket Assy.

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
V1		12AX7, Amplifier	R4		Resistor, 1.5Meg, 1/2 W.
V2		12AX7, AF Amplifier - Record Ind. Amplifier	R5		Resistor, 4.7K, 1/2 W.
			R6		Resistor, 100K, 1/2 W.
V3		50C5, Audio Output - Bias Osc.	R7		Resistor, 390K, 1/2 W.
V4		35W4, Rectifier	R8		Resistor, 10Meg, 1/2 W.
C1A	TC-1192	Elect. Cap., 30MFD. @ 150V.	R9		Resistor, 4.7Meg, 1/2 W.
C1B		Elect. Cap., 40MFD. @ 150V.	R10		Resistor, 10Meg, 1/2 W.
C1C		Elect. Cap., 40MFD. @ 150V.	R11		Resistor, 68K, 1/2 W.
C1D		Elect. Cap., 20MFD. @ 150V.	R12		Resistor, 10Meg, 1/2 W.
C2		Elect. Cap., 10MFD. @ 10V.	R13		Resistor, 82K, 1/2 W.
C3		Cap. Paper, .1MFD. @ 200V.	R14		Resistor, 220K, 1/2 W.
C4		Cap. Paper, .01MFD. @ 200V.	R15		Resistor, 68K, 1/2 W.
C5		Cap. Paper, .01MFD. @ 200V.	R16		Resistor, 100K, 1/2 W.
C6		Cap. Ceramic, 3000MMF.	R17		Resistor, 100K, 1/2 W.
C7		Cap. Ceramic, 200MMF.	R18		Resistor, 470K, 1/2 W.
C8		Cap. Paper, .01MFD. @ 200V.	R19		Resistor, 150, 1/2 W.
C9		Cap. Ceramic, 3000MMF.	R20		Resistor, 1000Ω, 1/2 W.
C10		Cap. Ceramic, 3000MMF.	R21		Resistor, 220Ω, 1 W.
C11		Cap. Ceramic, 200MMF.	R22		Resistor, 33Ω, 1 W.
C12		Cap. Paper, .02MFD. @ 200V.	T1	TM-272	Tape Transport Motor & Power Transformer
C13		Cap. Ceramic, 2000MMF.			
C14		Cap. Paper, .02MFD. @ 600V.	T2	TT-536	Output Transformer
R1	TP-662	Volume Control, 500K, 1/2 W. & On-Off SW.	L1	T2-566	Osc. Coil
			M1	TS-1244	Record-Play Switch
R2		Resistor, 3.3Meg, 1/2 W.	M2	TL-174	Record Level Indicator, Neon - 51
R3		Resistor, 100K, 1/2 W.	M3	TJ-145	Mike Jack
			SP1	TS-1179	Loud Speaker



ULTRATONE
MODELS 1001, 1040

ULTRATONE
MODELS 1001, 1040

TRADE NAME	Ultratone Models 1001, 1040
MANUFACTURER	Audio Industries, Michigan City, Indiana
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (Three)	Types 12AX7 AF Amp. - Phase Inverter, (2) 50C5 Output.
POWER SUPPLY	105-125 Volts AC - 60 Cycles RATING .34 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR V-M MODEL 954B - PHOTOFACT SET #302 - FOLDER 12.

L. F. C. ...NSHIP
3924 MEADE ST.
DENVER, COLORADO

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PARTS LIST AND DESCRIPTIONS

ULTRATONE
MODEL 1001

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA		NOTES
		ULTRATONE PART No.	STANDARD REPLACEMENT	
V1	AF Amplifier - Phase Inverter	12AX7	12AX7	
V2	Output	50C5	50C5	
V3	Output	50C5	50C5	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ULTRATONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C3	5000			BPD-005	DD-502	K080	811-005	DC525	5HK-D5	
C4	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C5	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C6	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C7	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C8	2.0	50								
C9	.05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							
	CAP.	VOLT.	ULTRATONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.	
C1A	▬80	150		PRS150V 804020	BBRT84215	TCT3117	TDL-804020-150	FMT-1540	TVA-3455	
B	■40	150						FM-1520		
C	▲20	150								

CONTROLS

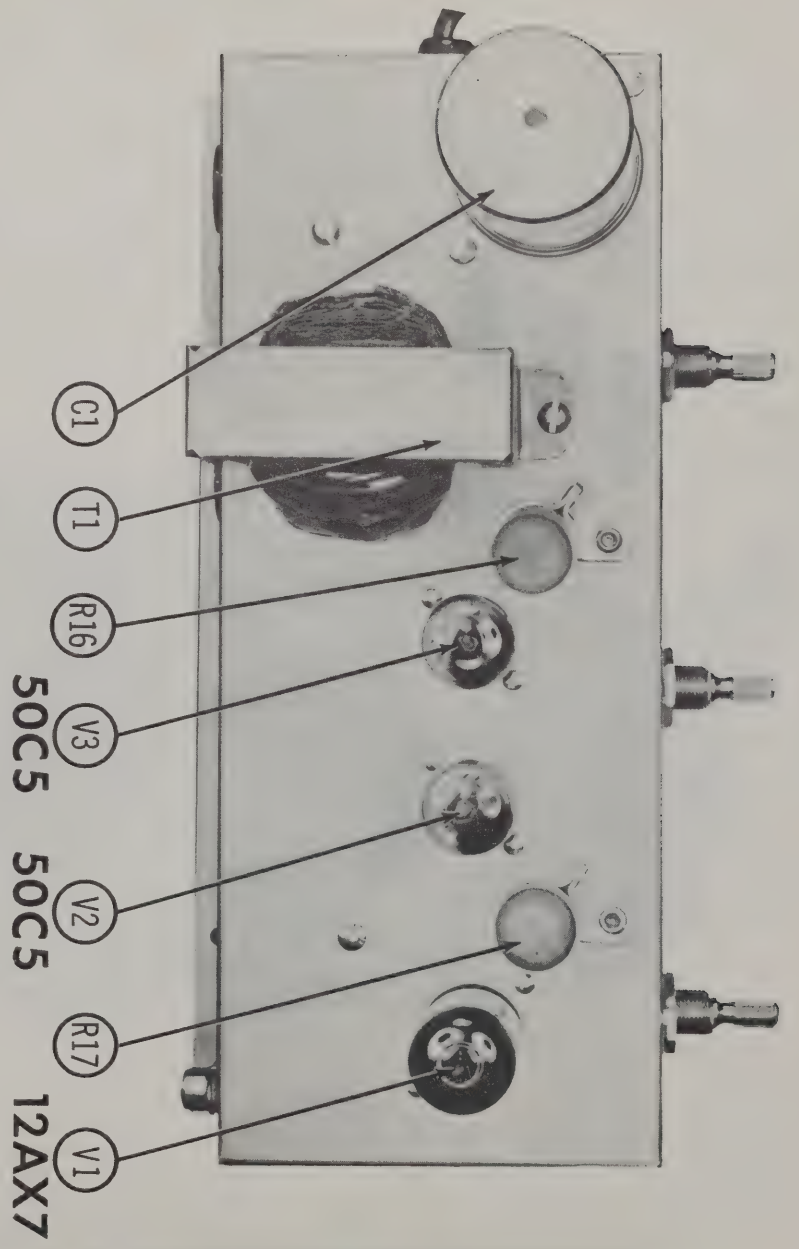
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ULTRATONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2.5Meg	½		ABT-79				Loudness
B	Shaft			AK-4				Attach to R1A
R2A	125KΩ	½		AB-43	A47-150K-S	Q11-228	U-415	Lows
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	Attach to R2A
R3A	7000Ω	½		AB-15	A47-10K-Z	Q13-116	U-18	Highs
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	Attach to R3A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ULTRATONE PART No.	IRC PART No.	
R4	270KΩ	½		BTS-270K	
R5	22KΩ	½		BTS-22K	
R6	270KΩ	½		BTS-270K	
R7	4500Ω	½		BTS-4700	
R8	22KΩ	½		BTS-22K	
R9	47KΩ	½		BTS-47K	
R10	270KΩ	½		BTS-270K	
R11	10KΩ	½		BTS-10K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ULTRATONE PART No.	IRC PART No.	
R12	10KΩ	½		BTS-10K	
R13	470KΩ	½		BTS-470K	
R14	82Ω	2		BTB-82	
R15	470KΩ	½		BTS-470K	
R16	56Ω	5			
R17	600Ω	5		1 3/4A-600	
R18	22Ω	1		BTA-22	
R19	100Ω	2		BTB-100	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ULTRATONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3.8KΩ CT	6.4Ω		Z1011		A-3830	22S62	S-57Z	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ULTRATONE PART No.	QUAM PART No.	RCA TYPE No.	
SP1	3"	PM	7.8Ω		3A07Z8		
SP2	8"	PM	3.1Ω		8A21	208S2	
SP3	8"	PM	3.4Ω		8A21	208S2	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	ULTRATONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.097A		1005A	RS150	6S150	5P1	150	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	ULTRATONE PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2				46T	0-1 or S-1 and 0-3	

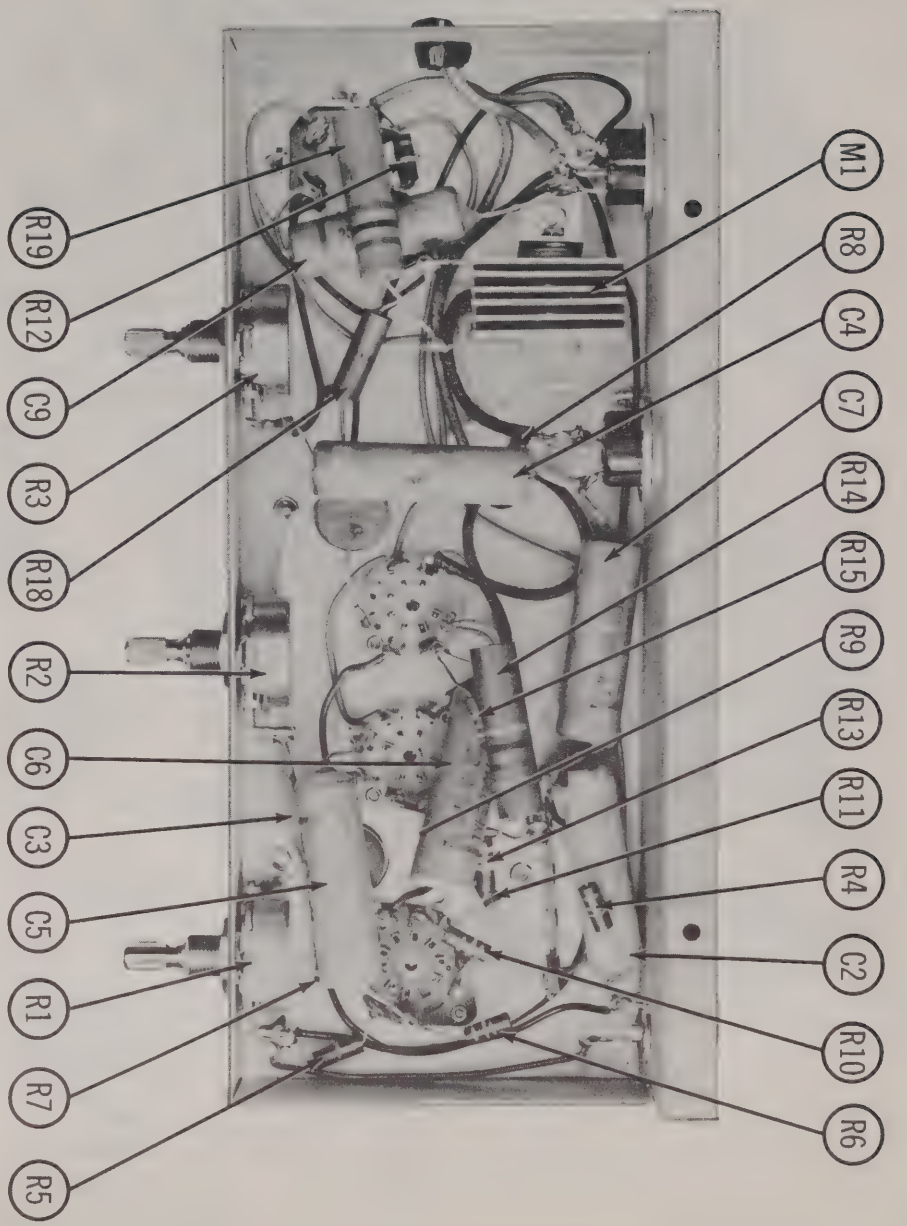
ELECTRO VOICE NEECLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

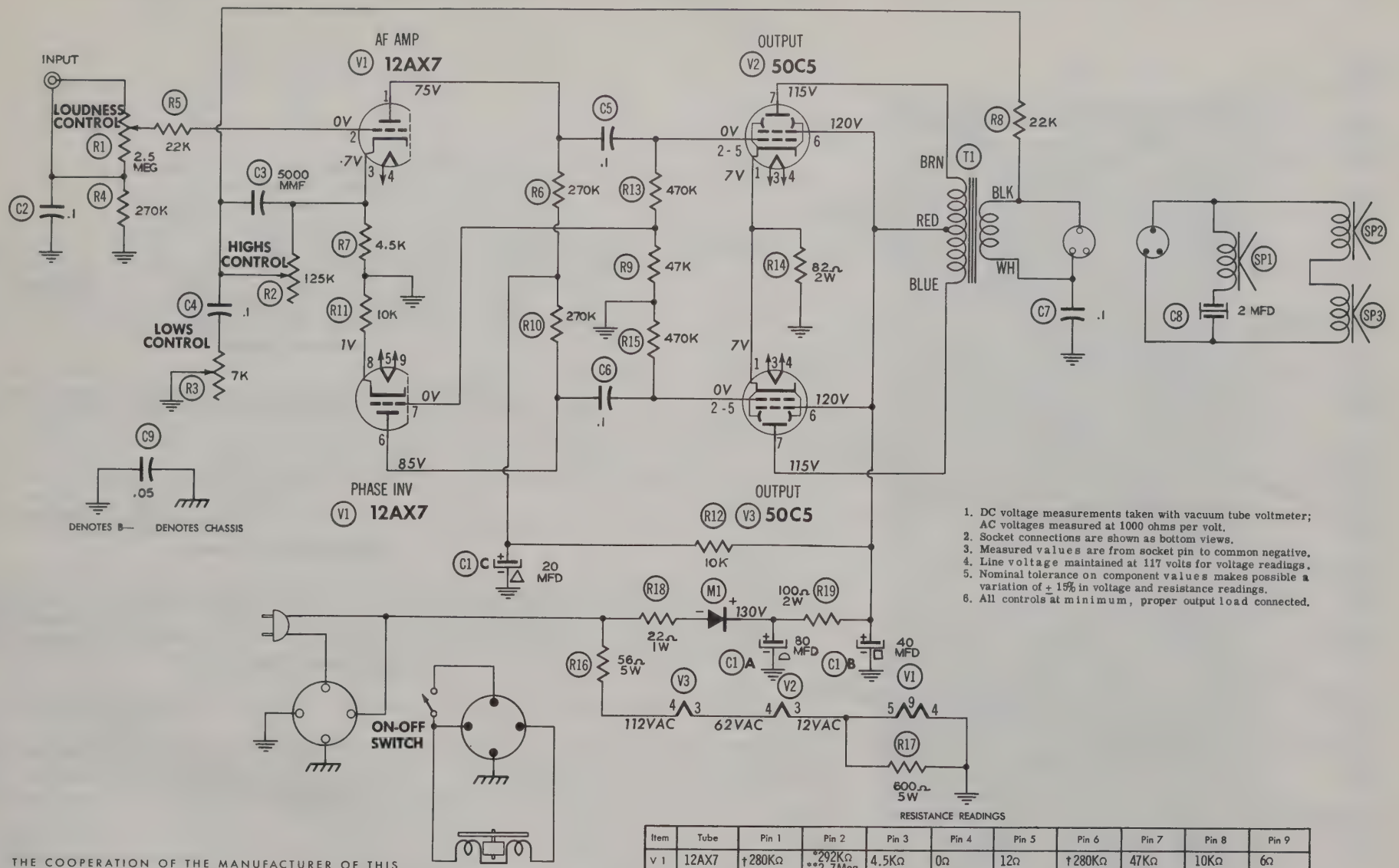
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	ULTRATONE PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M3			† CR-55 or ♦CR-55D and † CR-55LP or ♦CR-55LPD		† Metal ♦Diamond

CHASSIS—BOTTOM VIEW



ULTRATONE MODEL 1001



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†280KΩ	*292KΩ **2.7Meg	4.5KΩ	0Ω	12Ω	†280KΩ	47KΩ	10KΩ	6Ω
V 2	50C5	82Ω	517KΩ	12Ω	62Ω	517KΩ	†100Ω	† 225Ω		
V 3	50C5	82Ω	470KΩ	62Ω	112Ω	470KΩ	† 100Ω	†225Ω		

ALL MEASUREMENTS WITH PHONO MOTOR DISCONNECTED.
† – MEASURED FROM OUTPUT OF M1.
* – LOUDNESS CONTROL IN MINIMUM POSITION.
** – LOUDNESS CONTROL IN MAXIMUM POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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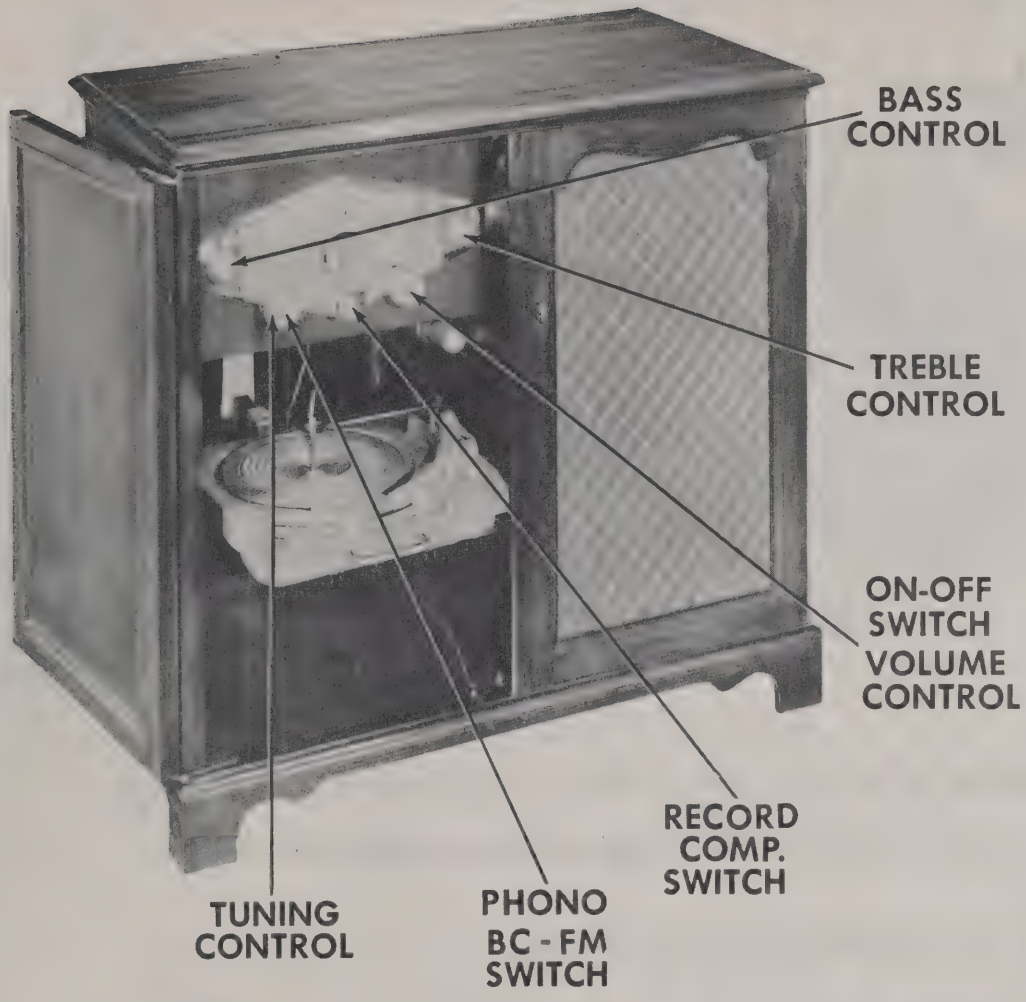
ZENITH HFX1283E,
HFX1286R (Ch. 12X20)



ZENITH HFX1283E,
HFX1286R (Ch. 12X20)

TRADE NAME	Zenith Models HFX1283E, HFX1286R (Ch. 12X20)	
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.	
TYPE SET	AC Operated FM-AM Superheterodyne Receiver With 4 Speed Automatic Record Changer	
TUBES	Twelve	
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING .96 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540KC-1620KC	FREQ. MOD. 88MC-108MC

RECORD CHANGER UNIT - ZENITH S-14067

L. F BLANKENSHIP
3744 EALE ST.
DENVER, COLORADO

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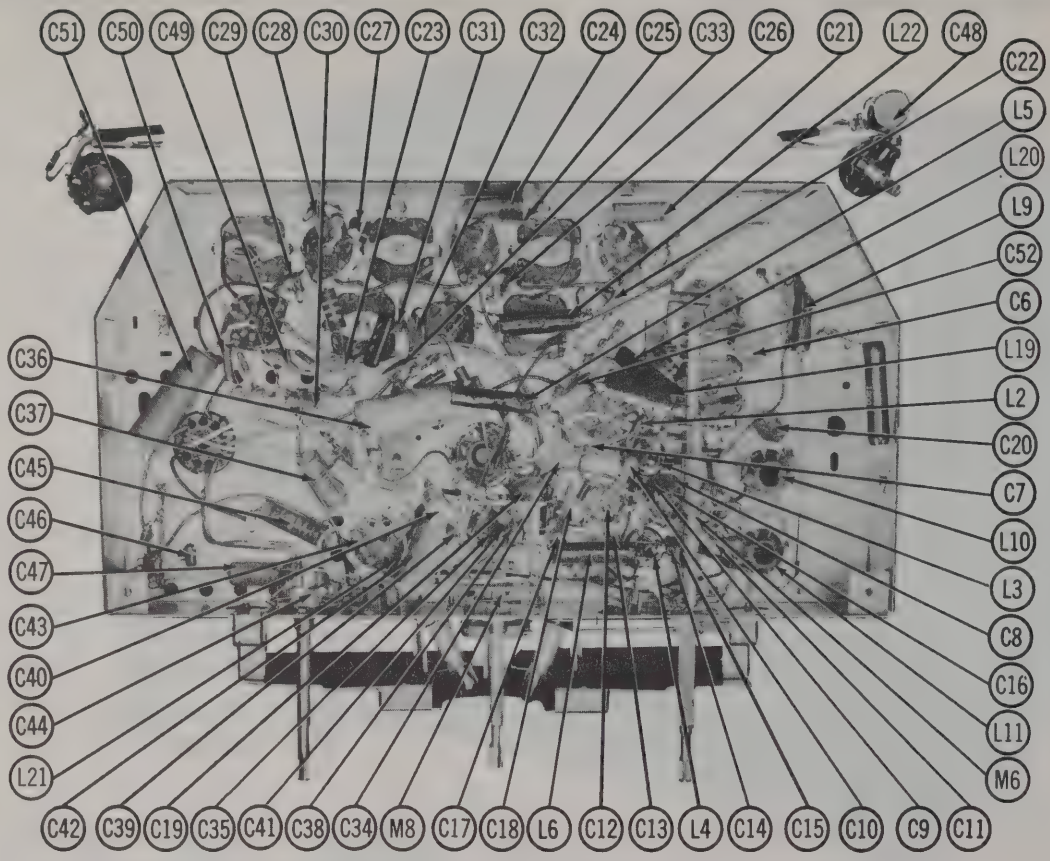
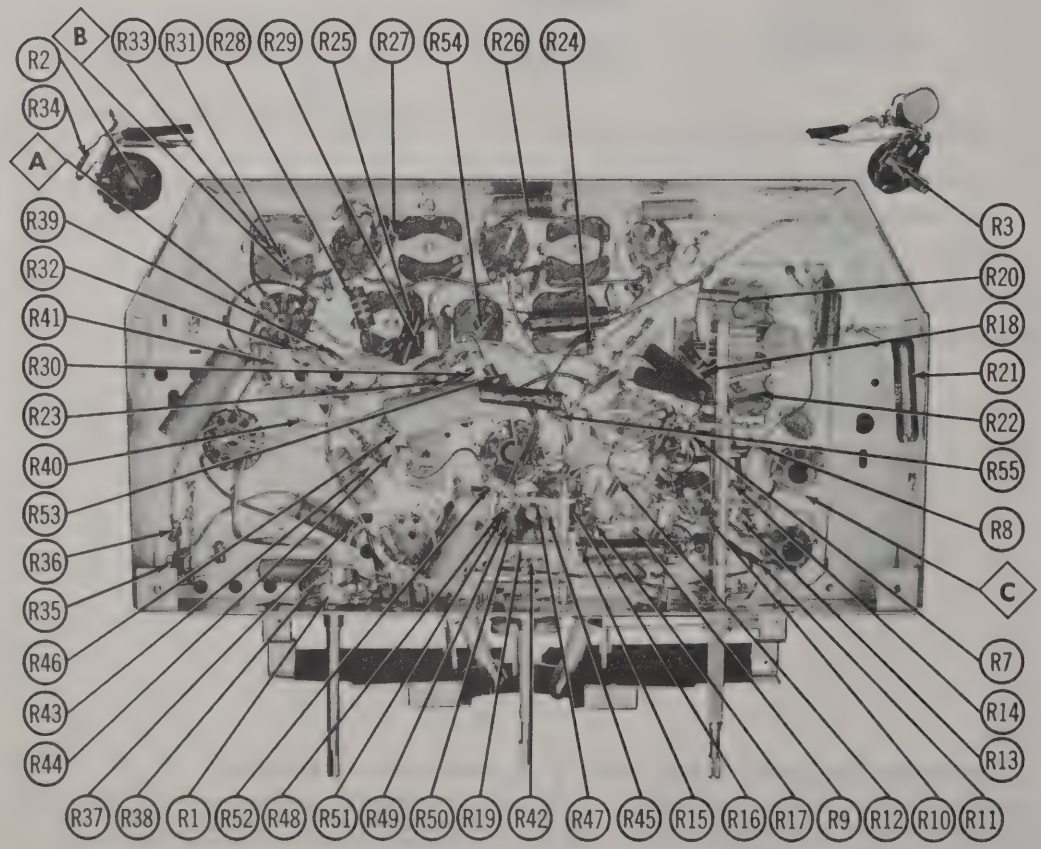
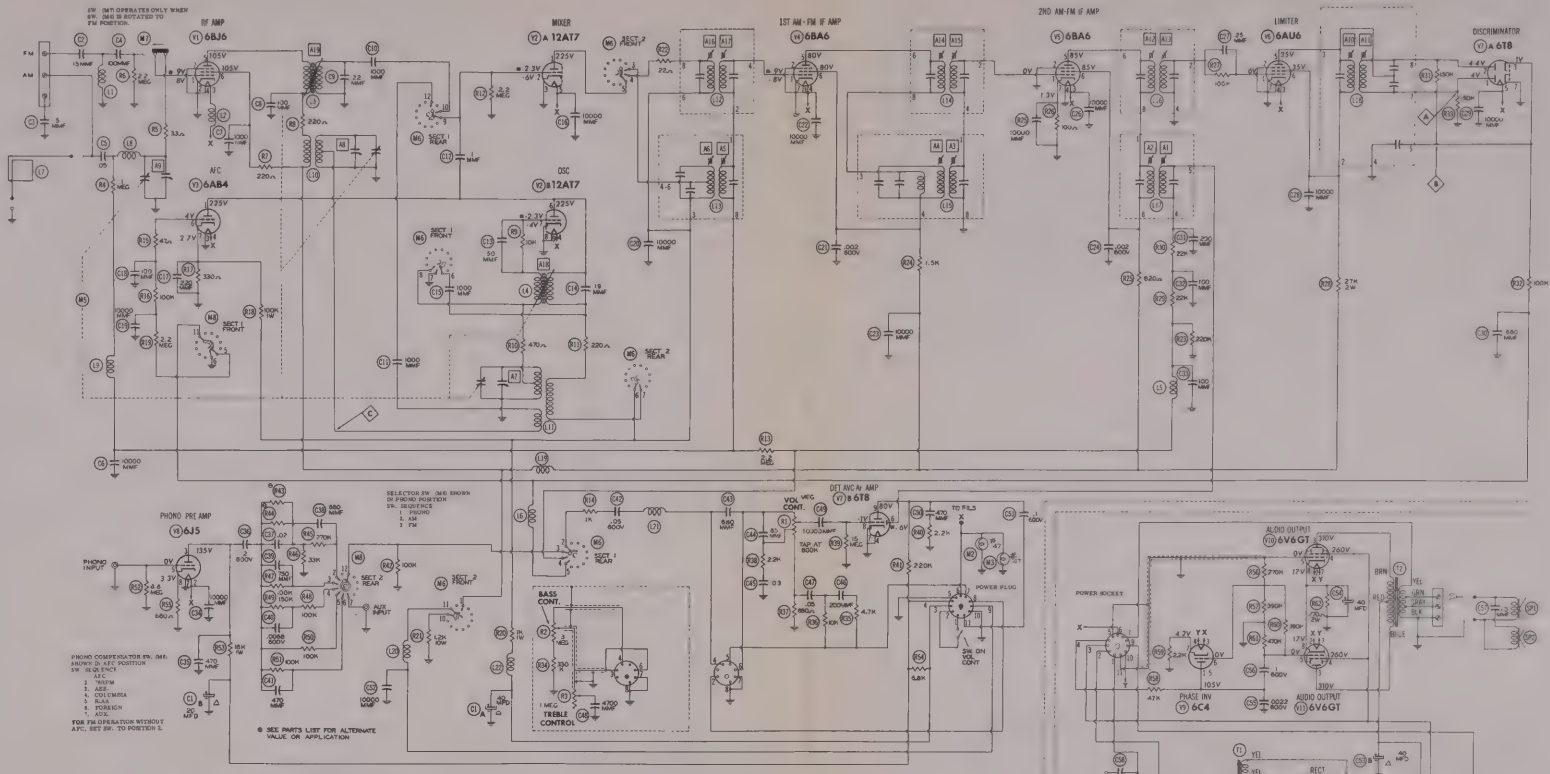


TUNER CHASSIS-BOTTOM VIEW-CAPACITOR IDENT.



TUNER CHASSIS-BOTTOM VIEW-RESISTOR IDENT.



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V-1	6BJ6	* 2.4Meg	0Ω	1Ω	0Ω	+ 4.9KΩ	+ 4.9KΩ	0Ω		
V-2	12AT7	+ 2KΩ	2.2Meg	0Ω	1Ω	1Ω	+ 2KΩ	108Ω	0Ω	0Ω
V-3	6AB4	+ 2KΩ	NC	0Ω	1Ω	NC	2.2Meg	330Ω		
V-4	6BA6	2.4Meg	0Ω	0Ω	1Ω	+ 6.5KΩ	+ 6.5KΩ	0Ω		
V-5	6BA6	20Ω	0Ω	1Ω	0Ω	+ 6KΩ	+ 6KΩ	100Ω		
V-6	6AU6	100KΩ	0Ω	1Ω	0Ω	+ 32KΩ	+32KΩ	0Ω		
V-7	6T8	150KΩ	150KΩ	300KΩ	0Ω	1Ω	266KΩ	0Ω	1.5Meg	228KΩ
V-8	6J5	TP	1Ω	+ 2KΩ	TP	6.8Meg	TP	0Ω	680Ω	
V-9	6C4	+ 56KΩ	NC	0Ω	1Ω	+ 54KΩ	270KΩ	2.2KΩ		
V-10	6V6GT	TP	1Ω	+ 500Ω	+ 880Ω	540KΩ	TP	0Ω	270Ω	
V-11	6V6GT	TP	1Ω	+ 500Ω	+ 880Ω	290KΩ	NC	0Ω	270Ω	
V-12	5U4GA	NC	70KΩ	TP	60Ω	NC	68Ω	NC	70KΩ	

ALL MEASUREMENTS TAKEN IN FM AND AFC POSITION UNLESS OTHERWISE DESIGNATED
* MEASURED IN AM POSITION
† MEASURED FROM PIN 2 OF V12.
TP TIE POINT.
NC NO CONNECTION

AM IF = 455KC
FM IF = 10.7MC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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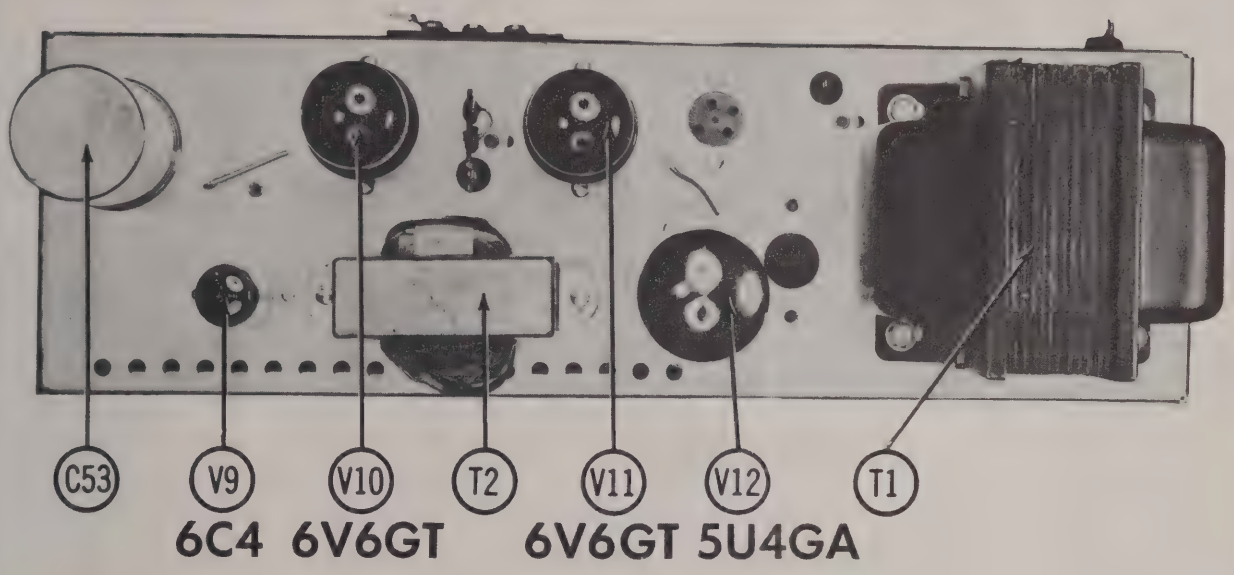
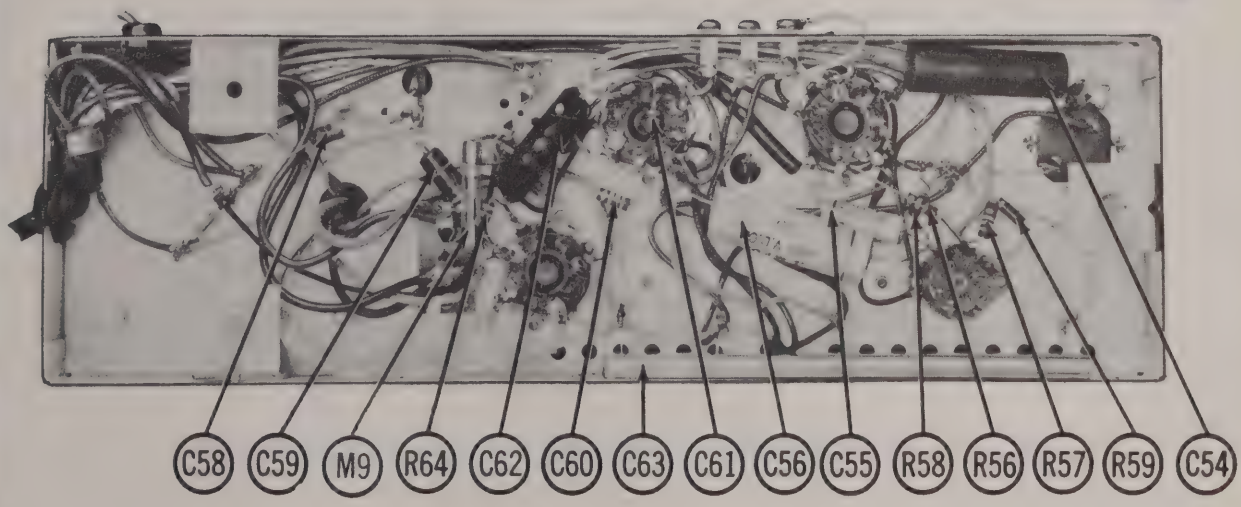
319-16



POWER CHASSIS-TOP VIEW



POWER CHASSIS-BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.
Use only enough generator output to provide usable indication on VTVM.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	455KC (400∿Mod)	AM	600KC	Across voice coil	A1, A2, A3, A4, A5, A6	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	High side to AM antenna terminals. Low side to chassis.	1600KC	"	Tuning gang fully open	"	A7	Adjust for maximum output.
3.	"	"	1400KC	"	Tune to 1400KC signal	"	A8, A9	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Use 2Meg isolation resistor in series with DC probe of VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.05MFD	High side to pin 1 (grid) of 6AU6 (V6). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A10	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	"	High side to pin 1 (grid) of 6BA6 (V5). Low side to chassis.	"	"	"	DC probe to pin 1 (grid) of 6AU6 (V6). Common to chassis.	A12, A13	Adjust for maximum deflection.
7.	"	High side to pin 1 (grid) of 6BA6 (V4). Low side to chassis.	"	"	"	"	A14, A15	"
8.	"	High side to point Ⓒ. Low side to chassis.	"	"	"	"	A16, A17	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.05MFD	High side to pin 1 (grid) of 6AU6 (V6). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis.	A10	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A11	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.
6.	"	High side to pin 1 (grid) of 6BA6 (V5). Low side to chassis.	"	"	"	Vert. Amp. to pin 1 (grid) of 6AU6 (V6). Low side to chassis.	A12, A13	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
7.	"	High side to pin 1 (grid) of 6BA6 (V4). Low side to chassis.	"	"	"	"	A14, A15	"
8.	"	High side to point Ⓒ. Low side to chassis.	"	"	"	"	A16, A17	"

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	270Ω Carbon Resistor	High side thru 270Ω to FM antenna terminal. Low side to "G".	98MC (Unmod)	FM	98MC	DC probe to pin 1 (grid) of 6AU6 (V6). Common to chassis.	A18, A19	Adjust in order given for maximum deflection.

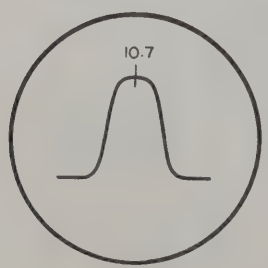


FIG. 1

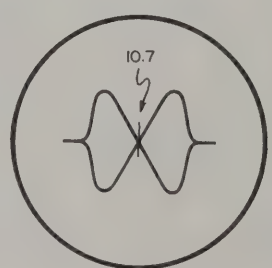


FIG. 2

TUNER PARTS LIST DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	NOTES
V1	RF Amplifier	6BJ6	6BJ6	
V2	Mixer-Oscillator	12AT7	12AT7	
V3	FM AFC	6AB4	6AB4	
V4	1st. IF Amplifier	6BA6	6BA6	
V5	2nd. IF Amplifier	6BA6	6BA6	
V6	Limiter	6AU6	6AU6	
V7	Disc.-AM Det.-AVC-AF Amplifier	6T8	6T8	
V8	Phono Preamplifier	6J5	6J5	

ELECTROLYTIC CAPACITORS

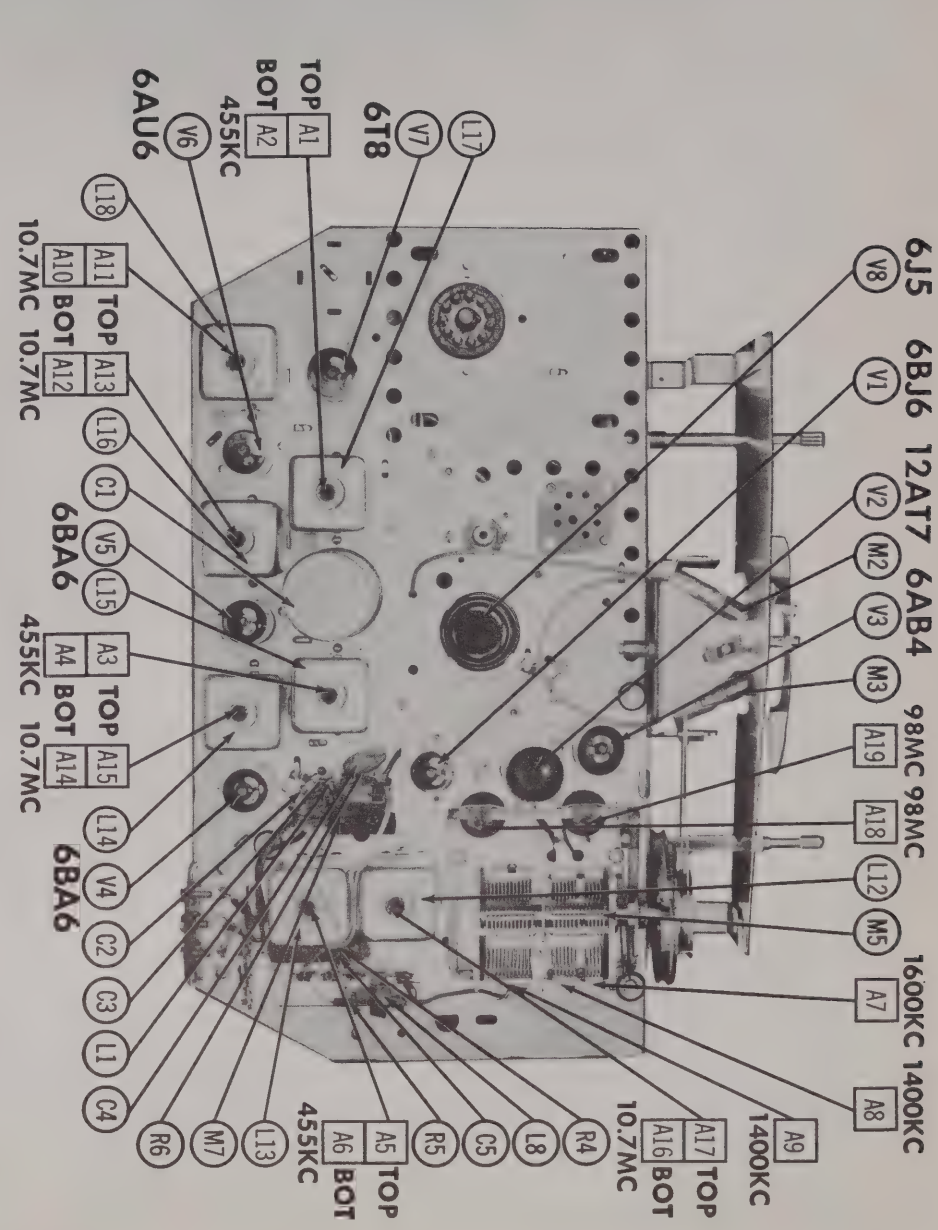
ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	450	22-2686	AFH2-56	B044	FP237	TM-4020-450	D-230	TVL-2759
B	▲20	450							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	15		22-2140	SI15	D6-150	TP11	GP1K-150	UC-5415	5GA-Q15	
C3	15		22-2140	SI15	D6-150	TP11	GP1K-150	UC-5415	5GA-Q15	
C4	100		22-5	BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C5	.05	200	22-829	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C6	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C7	1000		22-1676	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C8	100		22-5	BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C9	22		22-1506	SI22	D6-220	TP22	GP1K-220	UC-5422	5GA-Q22	
C10	1000		22-1676	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C11	1000		22-1676	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C12	1		22-1762	NP0-SI1	TCZ-1	TZ03	NP0A-010		5TCCB-V1	
C13	50		22-1367							
C14	19		22-2630							
C15	1000		22-1676	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C16	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C17	220		22-2320	SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22	
C18	100		22-9	BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C19	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C20	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C21	.002	600	22-1220	SI2000	D6-202	CUB6D2	GP2-333-202	PT622	6TM-D2	
C22	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C23	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C24	.002	600	22-1220	SI2000	D6-202	CUB6D2	GP2-333-202	PT622	6TM-D2	
C25	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C26	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C27	25		22-1887	SI25	D6-250	TP25	GP1K-250	UC-5425	5GA-Q25	
C28	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C29	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C30	680		22-2387	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C31	200		22-2472	BPD-0002	DD-201	G050	811-201	UC-532	5GA-T2	
C32	100		22-5	BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C33	100		22-5	BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C34	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C35	470		22-6	BPD-00047	DD-471	K060	831-471	UC-5347	5GA-T47	
C36	.2	600	22-2688	P688N-22		CUB6P2		PT602	6TM-P2	
C37	.02	400	22-1127	BPD-02	DD-203	CUB4S2	817-02	PT4122	4TM-S2	
C38	680		22-2387	SI680	D6-681	K065	GP2K-681	UC-5368	5GA-T68	
C39	750		22-1962	SI750	D6-751	G066	GP2K-751	UC-5375	5GA-T75	
C40	.0068	600	22-2268	BPD-0068	D6-682	CUB6D68	GP3-333-682		6TM-D68	
C41	470		22-2302	SI470	D6-471	K060	GP2K-471	UC-5347	5GA-T47	
C42	.05	600	22-2685	BPD-05	DF-503	CUB6S5		PT615	6TM-S5	
C43	680		22-2387	SI680	D6-681	K065	GP2K-681	UC-5368	5GA-T68	
C44	85		22-2684	SI82	D6-820	G040	GP1K-820		5GA-Q82	
C45	.03	200	22-1157	BPD-03	DF-303	CUB6S3		PT613	6TM-S3	
C46	200		22-1866	SI200	D6-201	G050	GP2K-201	UC-532	5GA-T2	

TUNER CHASSIS - TOP VIEW



TUNER PARTS LIST DESCRIPTIONS CONT.

CAPACITORS (cont)

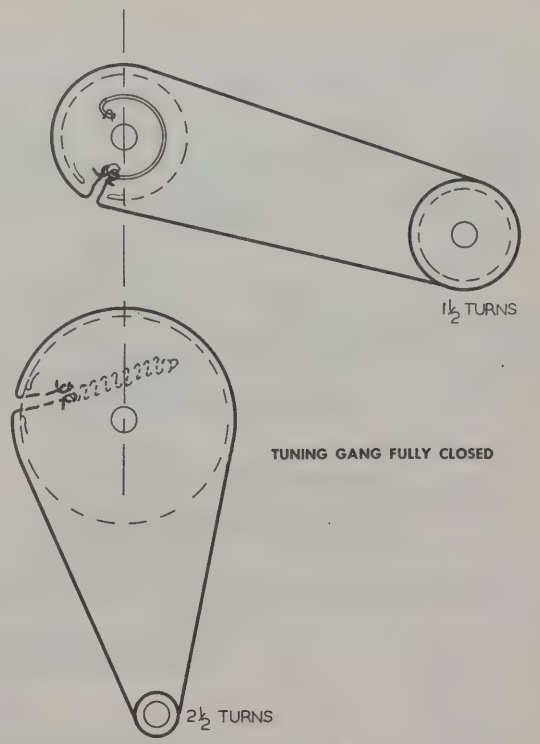
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C47	.05	200	22-829	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C48	4700		22-4	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C49	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C50	470		22-2302	SI470	D6-471	K060	GP2K-471	UC-5347	5GA-T47	
C51	.1	600	22-417	P688N-1	DF-104	CUB6P1		PT601	6TM-P1	
C52	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1.5Meg	½	63-2891	ABT-82	A47F3-2Meg	Q18-139X	UT-451	Volume-tapped @ 800KΩ
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	KB-1	SWE-12	76-1	US-26	Attach to R1A
R2A	3Meg	½	63-3293	AB-84	A47-3Meg-S	Q11-140	U-59	Bass
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R2A
R3A	1Meg	½	63-2893	AB-70	A47-1Meg-Z	Q13-137	U-53	Treble
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R3A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ZENITH PART No.	IRC PART No.	NOTES
R4	1Meg	½	63-1912	BTS-1Meg	
R5	33Ω	½	63-1723	BTS-33	
R6	2.2Meg	½	63-1926	BTS-2.2Meg	
R7	220Ω	½	63-1758	BTS-220	
R8	220Ω	½	63-1758	BTS-220	
R9	10KΩ	½	63-1827	BTS-10K	
R10	470Ω	½	63-1772	BTS-470	
R11	220Ω	½	63-1758	BTS-220	
R12	2.2Meg	½	63-1926	BTS-2.2Meg	
R13	2.2Meg	½	63-1926	BTS-2.2Meg	
R14	1000Ω	½	63-1786	BTS-1000	
R15	47Ω	½	63-1730	BTS-47	
R16	100KΩ	½	63-1869	BTS-100K	
R17	330Ω	½	63-1764	BTS-330	
R18	100KΩ	1	63-2137	BTA-100K	
R19	2.2Meg	½	63-1926	BTS-2.2Meg	
R20	1000Ω	1	63-1574	BTA-1000	
R21	1200Ω	10	63-2021	1 3/4A-1200	
R22	22Ω	½	63-1716	BTS-22	
R23	220KΩ	½	63-1884	BTS-220K	
R24	1500Ω	½	63-1793	BTS-1500	
R25	820Ω	½	63-2091	BW½-820	
R26	100Ω	½	63-1744	BTS-100	
R27	100KΩ	½	63-1869	BTS-100K	
R28	27KΩ	2	63-947	BTB-27K	
R29	22KΩ	½	63-1842	BTS-22K	
R30	22KΩ	½	63-1842	BTS-22K	
R31	150KΩ	½	63-1876	BTS-150K	
R32	100KΩ	½	63-1869	BTS-100K	
R33	150KΩ	½	63-1876	BTS-150K	
R34	330KΩ	½		BTS-330K	
R35	4700Ω	½	63-1813	BTS-4700	
R36	10KΩ	½	63-1827	BTS-10K	
R37	680Ω	½	63-1778	BTS-680	
R38	22KΩ	½	63-1841	BTS-22K	
R39	15Meg	½	63-1961	BTS-15Meg	
R40	2200Ω	½	63-1799	BTS-2200	
R41	220KΩ	½	63-1884	BTS-220K	
R42	100KΩ	½	63-1869	BTS-100K	
R43			63-3285	19PA1-V	Note 1
R44			63-3285	19PA1-V	Note 1
R45	270KΩ	½	63-1887	BTS-270K	
R46	33KΩ	½	63-1848	BTS-33K	
R47	100KΩ	½	63-1869	BTS-100K	



DIAL CORD STRINGING

TUNER PARTS LIST DESCRIPTIONS CONT.

RESISTORS (cont)

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R48	100KΩ	1/2	63-1869	BTS-100K	
R49	150KΩ	1/2	63-1876	BTS-150K	
R50	100KΩ	1/2	63-1869	BTS-100K	
R51	100KΩ	1/2	63-1869	BTS-100K	
R52	6.8Meg	1/2	63-1946	BTS-6.8Meg	
R53	18KΩ	1	63-2807	BTA-18K	
R54	6800Ω	1/2	63-1820	BTS-6800	
R55	680Ω	1/2	63-1778	BTS-680	

Note 1. Special "Varistor" type. Resistance changes in value according to the voltage.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM RF Choke	.1Ω		S-16408	19-3001		4602	1 Microhenry
L2	Fil. Choke	.9Ω		S-13997	19-1005		4612	9.5 Microhenries
L3	FM RF Coil	0Ω	0Ω	S-15743				
L4	FM Osc.Coil	0Ω	0Ω	S-15691				
L5	RF Coil	.1Ω		20-337	19-1003	BC-537	4608	
L6	RF Coil	.1Ω		20-337	19-1003	BC-537	4608	
L7	Loop Ant.	.6Ω		S-17325				
L8	Ant. Loading Coil	3.5Ω		S-18812	19-4201		6154	206 Microhenries
L9	RF Coil	.1Ω		20-337				
L10	AM RF Coil	2.7Ω	11Ω *	S-16344				* Tapped @ 3.4Ω
L11	AM Osc.Coil	.8Ω	9Ω ■	S-22185				■ Tapped @ 3.7Ω, Tertiary winding-1.2Ω
L12	1st. FM IF	.5Ω	.5Ω	95-1201	16-6665 ▲	FM-251	1451	▲ Drill new mtg. holes.
L13	1st. AM IF	4.8Ω	17Ω	95-1248				
L14	2nd. FM IF	.5Ω	.5Ω	95-1150	16-3487	FM-251	1451	
L15	2nd. AM IF	.5Ω	17Ω	95-1249				
L16	3rd. FM IF	.4Ω	.4Ω	95-1150	16-3487	FM-251	1451	
L17	3rd. AM IF	17Ω	11Ω	95-1254	16-5742	BC-340	912-C4	
L18	Discriminator Coil	.4Ω	.4Ω	95-1153	17-3484 †	FM-250 †	1452 †	
L19	RF Coil	.1Ω		20-337	19-1003	BC-537	4608	
L20	RF Coil	.1Ω		20-337	19-1003	BC-537	4608	
L21	RF Coil	.1Ω		20-337	19-1003	BC-537	4608	
L22	RF Coil	.1Ω		20-337	19-1003	BC-537	4608	

† Add diode filter cap. externally.

TUNER PARTS LIST DESCRIPTIONS CONT.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	ZENITH PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	142-77					

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Dial Light	100-67	#47
M3	Dial Light	100-67	#47
M4	Pilot Light	100-67	#47, Cabinet jewel
M5	Tuning Cap.	22-2400	3 Gang (18-370MMF, 11-200MMF, 11-85MMF)
M6	Switch	85-557	Selector (Rotary, wafer type)
M7	Switch	85-505	AM-FM (SPDT Slide type) mechanically actuated by M6
M8	Switch	85-565	Record compensation (Rotary, wafer type)
	Cabinet	14-1770E	Model HFX1283E
	Cabinet	14-1771R	Model HFX1286R
	Knob	46-1041	Tuning
	Knob	46-1043	Selector & record compensation switches
	Knob	46-1153	Tone (2 used)
	Knob Assy.	S-19316	On-off-volume
	Dial Crystal	192-138	
	Dial Scale	S-22182	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M9	3AG P/T	2A 250V	136-24		318002. (3AG P/T 2A)		GJV2	

POWER CHASSIS PARTS LISTS

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	REPLACEMENT DATA		NOTES
		ZENITH PART No.	STANDARD REPLACEMENT	
V9	Phase Inverter	6C4	6C4	
V10	Output	6V6GT	6V6GT	
V11	Output	6V6GT	6V6GT	
V12	Rectifier	5U4GA	5U4GA	5U4G used in some versions

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C53A	▲40	450	22-1612	AFH2-57	B045	FP238	TM-D40-450	D-235	TVL-2764
B	▲40	450							
C54	40	25	22-1156	PRS25V50	BR502	TC29	TD-50-25	FM-0250	TVA-1206

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C55	.0022	600	22-1814	SI2200	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C56	.1	600	22-1841	P688N-1	DF-104	CUB6P1		PT601	6TM-P1	
C57	1.0	120	22-1623	P288N-1.0		CUB2W1		PT41	2TM-M1	
C58	30		22-1705	SI30	D6-300	G028	GP1K-300	UC-5433	5GA-Q3	
C59	.0047	600	22-2579	BPD-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R56	270KΩ	½	63-1887	BTS-270K	
R57	390KΩ	½	63-1894	BTS-390K	
R58	47KΩ	½	63-1856	BTS-47K	
R59	2200Ω	½	63-1799	BTS-2200	
R60	390KΩ	½	63-1894	BTS-390K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R61	470KΩ	½	63-1898	BTS-470K	
R62	270Ω	2	63-1452	BW2-270	
R63A	130Ω	5	63-3255	1 3/4A-125	
B	750Ω	7.5		1 3/4A-750	
C	4000Ω	15		2D-4000	
R64	470KΩ	½	63-1898	BTS-470K	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC Ⓐ .96A	635VCT Ⓐ.135A	5VAC Ⓐ 3A	6.3VAC Ⓐ3.56A	95-1414					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7.6KΩ	3.8Ω tap Ⓐ 1.6Ω	95-1415			A-3870			

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	RCA TYPE No.	
SP1	3½"	PM	11.8Ω	49-777	3A15T		
SP2	12"	PM	3-4Ω	49-778	12A6A	41286	